Consolidated Safety Services

Connecticut Street Readiness Center
Buffalo, New York 14201

Submitted to:

National Guard Region North
Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

NATIONAL GUARD READINESS CENTER
INDUSTRIAL HYGIENE EVALUATION

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Connecticut Street Readiness Center
Buffalo, New York

Industrial Hygiene Evaluation

Prepared for:

National Guard Region North Industrial Hygiene Office
Havre de Grace, Maryland 21078

Prepared by:

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September 11, 2008

Prepared by: _____

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Reviewed by: _____

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1. EXECUTIVE SUMMARY

Consolidated Safety Services, Inc. (CSS) was contracted by the U.S. Army National Guard to perform an industrial hygiene evaluation at the Connecticut Street New York State Readiness Center located at 184 Connecticut Street, in Buffalo, New York. Non-Responsive performed the evaluation on September 11, 2008. The point of contact for the facility was Ms. Non-Responsive, Superintendent. The purpose of the evaluation was to assess industrial hygiene concerns in the facility, evaluate workers' personal exposures, and review industrial hygiene and safety programs.

The following industrial hygiene and safety programs were evaluated during the site visit: confined space, hearing conservation, respiratory protection, hazard communication (HAZCOM), and personal protective equipment (PPE).

The following industrial hygiene concerns were evaluated during the site visit:

- Noise exposure;
- Illumination;
- Deteriorated suspect lead-based paints;
- Damaged suspect asbestos-containing materials;
- Water damage and possible mold growth;
- General housekeeping;
- Indoor air quality; and
- Ergonomics.

There were several industrial hygiene concerns identified during the assessment. The Risk Assessment Code (RAC) is presented for each identified concern or deficiency:

- There was visual evidence of minor to significant water damage to several ceilings, suspended ceiling tiles, and walls within the facility. There was no evidence of suspect mold growth identified in the facility. The sources of the water intrusion should be identified and corrected and water-damaged ceiling tiles should be replaced to minimize the potential for mold growth. The roof was reportedly undergoing a replacement during the site visit (**RAC 4**). **29 CFR 1960.8a**

- There are several locations where the measured illuminance levels are below those recommended by the Illuminating Engineering Society of North America. Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels (**RAC 4**). **ANSI/IESNA RP-1-04 (Office Lighting) and ANSI ANSI/IESNA RP-7-01 (Lighting Industrial Facilities)**

- Asbestos-containing 9 inch x 9 inch brown floor tile with tan and peach flecks was identified in Room B-30 (Moral Support Room). Overall, the floor tile material was in good condition with a few areas of minor, isolated damage. It is recommended that a detailed operation and maintenance (O&M) plan be developed to insure that the condition of the floor tile is maintained in good condition. Housekeeping and maintenance personnel should be advised of the presence of the suspect asbestos-containing material (**RAC 4**). **29 CFR 1910.1001(j)(7)(iv)** and **29 CFR 1960.8a**

- There were five dust wipe samples (in three locations) collected from Hallway 1-14b, the indoor Firing Range, and from the hallway outside the indoor Firing Range that were above the NGB Region North IH Office limit of 200 micrograms/square foot (µg/ft^2). It is recommended that signage be posted in the indoor Firing Range warning of the lead hazard and this area should continue to be locked and not permitted for entry. Each of the other areas should be cleaned to eliminate the lead dust contamination. Anyone that may perform work in these areas, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust (**RAC 4**). **NGB Region North IH Office limit of 200 micrograms/square foot (µg/ft^2)**

- Detectable levels of lead were found in all ten paint chip samples collected and therefore considered to be lead-containing paint. OSHA requires that precautions be taken when lead is present, but does not define a threshold below which no action is required. Therefore, anyone that may perform repair or maintenance activities to any surfaces in these areas must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead-based paint. The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. Six of the ten peeling paint samples contained levels of lead that were above the HUD criteria of 0.5% lead by weight (**RAC 4**). **Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62 and Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing**

- Boxes are stacked in the garage area and do not appear to be stable or secure against sliding or collapse. It is recommended to reduce the number of boxes stacked which will reduce the likelihood of the boxes sliding, collapsing, or falling (**RAC 3**). **29 CFR 1910.176(b)**

2. INTRODUCTION

Consolidated Safety Services, Inc. (CSS) contracted with the U.S. Army National Guard (USARNG) to perform an industrial hygiene evaluation at the Connecticut Street Readiness Center at 184 Connecticut Street in Buffalo, New York. Non-Responsive performed the evaluation on September 11, 2008. The point of contact for the facility was Ms Non-Responsive, Superintendent. The purpose of the evaluation was to review industrial hygiene and safety programs, evaluate potential exposures to physical and chemical hazards, and evaluate exposure control strategies and equipment. The building was visually inspected and evaluated for: damaged suspect asbestos-containing materials (ACM), water-damaged building materials, possible mold growth, housekeeping, deteriorated suspect lead-based paints, and poor indoor air quality.

The Connecticut Street Readiness Center currently has seven units assigned to the facility: C CO, 427 Brigade Support Battalion; C CO, 427 Brigade Support Battalion Rear; HHC (-), 27th Brigade Special Troops BN; C CO, 27th Brigade Special Troop BN; 153 Troop Command BDE; 29 Personnel Services DET; and 152 Engineer Support Company. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations. The building that houses the Connecticut Street Readiness Center was constructed in 1898 and consists of multiple offices, two kitchens, a mess hall, men's and women's restrooms, a locker room, supply areas, a garage area, a grand court and an indoor firing range. The attached garage is used to park vehicles and store materials. No maintenance is performed in the attached garage. According to the Superintendent, the indoor Firing Range has not been properly cleaned. The entry door is therefore locked. Only authorized personnel may enter.

The findings, discussion and interpretation of results are provided in Section 4 through Section 8. The conclusions are provided in Section 9. A diagram of the building layout is provided in Appendix A. Sampling sheets and laboratory results for Lead Paint, Lead in Air, Lead dust, and asbestos floor tile and ceiling results are provided in Appendix B. Selected photographs taken during the evaluation are provided in Appendix C. An explanation of how the Risk Assessment Code (RAC) was determined is located in Appendix D. A list of references used during the evaluation is provided in Appendix E.

This report is for the sole use of the USARNG. The results presented in this report are only indicative of conditions during the time of the evaluation. This evaluation does not purport to include all occupational hazards at this facility, and only those areas and exposures specifically mentioned were evaluated.

3. EVALUATION METHODS

3.1 *Noise Survey*

Sound pressure levels were measured using a Larson Davis Spark noise dosimeter model # 706RC and serial #17309. The noise dosimeter was factory calibrated May 15, 2008.

3.2 *Illumination*

Illumination measurements were taken using a Cal-Light 400, factory calibrated on June 17, 2008, and results were compared to the American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

3.3 *Indoor Air Quality Measurements*

Indoor air quality parameters (i.e., carbon dioxide concentration, carbon monoxide concentration, temperature and relative humidity) were measured using a TSI Q-Trak Plus Model 8554, factory calibrated in February 2008. Carbon dioxide, temperature and relative humidity measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). CO levels were compared to Occupational Safety and Health Administration Permissible Exposure Limit, the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for CO.

4. OPERATIONS DESCRIPTIONS

4.1 *Facility Operations*

There are currently seven units assigned to the facility C CO, 427 Brigade Support Battalion; C CO, 427 Brigade Support Battalion Rear; HHC (-), 27th Brigade Special Troops BN; C CO, 27th Brigade Special Troop BN; 153 Troop Command BDE; 29 Personnel Services DET; and 152 Engineer Support Company. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations.

4.1.a. Noise Measurements

A sound level survey was performed to determine if there were any hazardous noise areas at the facility that could possibly result in exposures to personnel in excess of the Permissible Noise Dose. Sound pressure levels were measured throughout the facility. Measurements ranged from 62 dBA to 77 dBA within the facility. Exposure to sound pressure levels of this magnitude would not result in exposures equal to or in excess of the Permissible Noise Dose over an eight hour period.

4.1.b. Lighting Survey

Illumination levels were measured in all areas within the facility. The measurements indicate that several areas did not meet the ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities). The measurement results are presented in Table 1.

4.1.c. Additional Information

N/A

4.1.d. Recommendations

Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels.

5. PHYSICAL CONDITION OF THE FACILITY

5.1 *Visual Inspection – Peeling Paint – Lead*

A visual inspection was performed to determine if any areas of peeling or deteriorated paint at the facility could pose a lead exposure hazard. There were ten areas in nine locations where paint was peeling and may result in a potential exposure hazard. These areas include Room 1-8 (Freedom Hall), Room 1-4 (Women's Lounge), Room B-15 (Men's Restroom), the Firing Range, the Basement Hallway, Room 3-14 (Classroom), Third Floor Hallway, Room 3-10f (Office), and Room 3-11a (Office). Ten paint chip samples were collected and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) Method 7420.

The results, presented in Table 3, indicated detectable levels of lead in all ten samples collected. The paint is therefore considered to be lead-containing paint. All construction activities that involve lead-containing coatings are regulated by the Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62. The standard currently does not define a specific concentration of lead, which must be present within paint for it to be considered "lead-containing." Therefore, painted and glazed surfaces that contain detectable concentrations of lead must be handled in accordance with the OSHA Lead in Construction Standard. Any contractor performing work that could impact paint films or glazing that have detectable concentrations of lead must be informed of the testing results, and must take appropriate actions to comply with OSHA Standard 29 CFR 1926.62. These appropriate actions include performing air monitoring to measure worker exposure; assuring that the workers are provided with adequate respiratory protection; and assuring that workers are provided with appropriate training.

The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. The peeling white paint on the closet wall in Room 1-8 (Freedom Hall), the peeling cream paint on the wall of Room 1-4 (Women's Lounge), the peeling cream paint on the wall of the Basement Hallway, the peeling cream paint on Room 3-14 (Classroom) wall, the peeling cream paint on the wall of Room 3-11a (Office), and the peeling white paint on the ceiling of Hallway 3-7a contained more than 0.5% lead by weight and are therefore considered lead-based paint.

5.2 *Visual Inspection – Dust – Lead*

Due to concerns with lead contamination, wipe samples were collected from various surfaces throughout the facility. Twenty samples were collected from the walls, floors, and other surfaces. The samples were collected using "Ghost Wipes" using the prescribed NIOSH method for conducting surface wipe samples. The samples were collected and placed in new plastic containers and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental

Protection Agency (EPA) 600/R-93/200 Lead in Surface Wipe Samples. The results for the wipe samples, presented in Appendix B indicate that there were five samples collected from Hallway 1-14b, the indoor Firing Range, the hallway outside the indoor Firing Range, and the Commander's office that were above the NGB Region North IH Office limit of 200 micrograms/square foot (µg/ft^2). It is recommended that signage be posted in the indoor Firing Range warning of the lead hazard and this area should continue to be locked and not permitted for entry. Each of the other areas should be cleaned to eliminate the lead dust contamination. Anyone that may perform work in these areas, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust.

5.3 *Visual Inspection – Asbestos*

A visual inspection was performed to determine if there was any suspect asbestos-containing material (ACM) at the facility and its condition. There was a total of approximately 1000 square feet (ft^2) of 9 inch x 9 inch brown floor tile with tan and peach flecks, identified in Room B-30 (Moral Support Room). Overall, the floor tile material was in good condition with a few areas of minor, isolated damage. One sample of floor tile was collected and submitted to AMA Analytical Services, Inc., to be analyzed by Polarized Light Microscopy (PLM) and Transmission Electron Microscopy (TEM), to determine if the tiles are asbestos-containing. The result of the sample, presented in Appendix B, indicates that the floor tile is an asbestos-containing material. It is recommended that anyone conducting work on any asbestos-containing material or presumed asbestos-containing material be made aware of the asbestos and the appropriate precautions be taken to minimize exposures. In addition, a detailed operation and maintenance (O&M) plan should be developed to ensure that the materials are not damaged. Approximately 1000 ft^2 of 12 inch x 12 inch ceiling tile, including several damaged tiles, were noted in the firing range. One sample of ceiling tile was collected and submitted to AMA Analytical Services, Inc., to be analyzed by Polarized Light Microscopy (PLM) and Transmission Electron Microscopy (TEM), to determine if the tiles are asbestos-containing. The result of the sample, presented in Appendix B, indicates that the ceiling tile is not an asbestos-containing material.

5.4 *Visual Inspection – Water Damage and Mold Growth*

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. There was no evidence of mold growth, but some evidence of water damage to the ceiling, ceiling tiles, or walls the in following areas: Room 1-17 (Administration Office), the Firing Range, Room 3-4 (Fitness Room), Room 3-14 Classroom, Third Floor Hallway, Room 3-10d (Office), Room 3-10e (Office), Room 3-10f (Office, Room 3-11a (Office), Room 312, and Room 2-2 (Office). The sources of the water intrusion should be identified and corrected and water-damaged ceiling tiles should be replaced to minimize the potential for mold growth. According to the Superintendent, the roof was undergoing a replacement at the time of the survey which should eliminate the dater incursion problems.

5.5 *Visual Inspection – Housekeeping*

A visual inspection was performed to assess the state of housekeeping in the facility. Housekeeping was good overall, with the exception of boxes stacked in the garage that do not appear to be stable and secure. It is recommended that the boxes be reduced in height to reduce the potential that they may slide, collapse, or fall.

6. BUILDING CONCERNS

6.1 *Ergonomic Concerns*

Interviews of employees were conducted and observations made to determine if there were work activities that result in any ergonomic concerns in the facility. No ergonomic concerns were identified.

6.2 *Illumination Issue*

Illumination levels were measured in nearly all areas of the facility and the results indicate that some illuminance levels do not meet the levels recommended by the Illuminating Engineering Society of North America. The measurements ranged from a low of one foot candle (fc) to a high of 80 fc. The complete results of the evaluation can be found in Table 1, including whether or not the measured levels met ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities) recommendations for illumination.

6.3 *Indoor Air Quality (IAQ)*

Temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) were evaluated in the facility and compared with recognized "comfort factors." Currently, there are no enforceable regulatory IAQ standards. However, ASHRAE defines acceptable IAQ as air (1) in which there are no known contaminants at harmful levels, as determined by cognizant authorities, and (2) about which a substantial majority (80% or more) of the people exposed do not express dissatisfaction. ASHRAE Standard 62.1-2007, "Ventilation for Acceptable Indoor Air Quality," represents the state-of-the-art in ventilation design requirements for commercial, institutional, and residential buildings. It was developed "to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to minimize the potential for adverse health effects." The standard also considers chemical, physical, and biological contaminants and other factors that impact IAQ and affect occupant health and comfort.

A digital IAQ meter (TSI Q-Trak Plus, model #8554) was used to collect temperature, relative humidity, CO_2, and CO measurements in several areas throughout the facility. Results are provided in Table 2. These measurements were compared with current ASHRAE consensus standards and were found to be within acceptable limits.

6.3.a. Carbon Dioxide (CO_2)

Building occupants generate CO_2 as a product of respiration. Concentrations of CO_2 are often used during indoor air quality investigations to determine the effectiveness of ventilation systems in

removing common indoor pollutants. The indoor CO_2 concentration will increase in a given space with fixed ventilation output in proportion to the number of building occupants and their activity level. ASHRAE Standard 62.1-2007 uses CO_2 as a surrogate indicator of building ventilation; namely, an indoor-outdoor CO_2 concentration differential of less than 700 parts per million (ppm) is considered to indicate adequate ventilation. This level is not considered an indication of a health risk, but rather an indicator for human comfort.

Indoor levels of CO_2 ranged from 380 parts per million (ppm) in the Room 3-1 (Gym) to 580 ppm in Room B-30 (Moral Support Room). Outdoor CO_2 levels were approximately 355 ppm during the monitored period. The indoor CO_2 levels were less than 1055 ppm (the outdoor CO_2 levels plus 700 ppm), which indicates adequate ventilation.

6.3.b. Carbon Monoxide (CO)

The Occupational Safety and Health Administration has established a Permissible Exposure Limit for carbon monoxide of 50 per million (ppm) averaged over an eight-hour work day. Similarly, the American Conference of Governmental Industrial Hygienists has established a Threshold Limit Value of 25 ppm averaged over an eight-hour work day. The National Ambient Air Quality Standard (NAAQS) recommended for ambient CO is below 9 ppm over an eight-hour work day. The CO measurements in the facility were well below the monitor's level of detection, which is 1 part per million. These levels are well below the established occupational exposure limits and CO is not expected to present a hazard to employees at this facility.

6.3.c. Temperature

Indoor temperature measurements in the facility ranged from 67°F in the Garage to 74.5°F in the Regimental Parlor Room. These temperatures will not give rise to heat or cold stress and are close to the range recommended by ASHRAE. They are therefore considered acceptable. The garage had a slightly lower temperature because the garage doors were open at the time of the survey. As a result, the readings collected in the garage area were greatly influenced by outdoor conditions. The levels found may be considerably different during times of the year when the doors remain closed.

6.3.d. Relative Humidity

Indoor relative humidity (RH) measurements ranged from 43% in Room 3-14 (Classroom) to 58% in the indoor Firing Range. The results of the measurements indicate that employees were not exposed to temperature or humidity levels at the time of the survey that could give rise to heat- or cold-induced injuries.

6.3.e. Lead Air Sampling

Due to concerns with lead contamination, air samples were collected from two areas in the facility; Room 1-6 (Recruiter's Office) and Room 1-17 (Administration Office). The samples were collected using SKC brand personal sampling pumps with the appropriate sampling media. Pumps were calibrated both before and after use with a Dry-Cal calibrator, which is considered a primary standard. General area samples were collected as close to breathing zone height as could be

achieved. Samples were collected for 433 and 434 minutes, resulting in a sampled volume of 866 and 868 liters of air, respectively. The samples were shipped to AMA Analytical Services, Inc. and Analysis was conducted in accordance with the Environmental Protection Agency (EPA) 600/R-93/200 Lead in Air Samples. Both air samples were below the OSHA PEL and ACGIH TLV of 50 $\mu g/m^3$ as an 8 Hour time weighted average (TWA). Results as reported by the laboratory are included as Appendix B. The results from the air samples collected over the 7.2 hour period were compared directly to the OSHA PEL, which is based on an 8-hour Time-Weighted Average, because the airborne concentration of lead is not expected to change in the office areas sampled.

7. INDUSTRIAL HYGIENE AND SAFETY PROGRAMS

An evaluation was performed to determine the applicability of the following programs:

- Confined Space;
- Hearing Conservation;
- Respiratory Protection;
- Hazard Communication (HAZCOM); and
- Personal Protective Equipment (PPE).

It was determined that all industrial hygiene and safety programs are managed at the unit level and there are no specific facility based programs; therefore, no programs were reviewed for the facility. According to the Superintendent, all facility employees are required to attend an annual safety class which includes a review of PPE standards, chemical inventory, asbestos awareness training, and hazardous assessment.

8. VEHICLE, EQUIPMENT AND HAZARDOUS MATERIALS LIST

The use of the items on the equipment and hazardous materials lists were evaluated and it appears that all the items are used at the facility. The Material Safety Data Sheets (MSDS) were in order and all chemicals found in the facility were listed in the materials list (or chemical inventory) at the beginning of the MSDS notebook. According to the Maintenance Assistant there are no vehicles assigned specifically to the facility. All vehicles at the facility are assigned to specific units for the use only.

9. CONCLUSION

Industrial hygiene concerns associated with some water damage to several ceilings, suspended ceiling tiles, and walls were identified at the facility. Illumination levels were low in some areas of the facility. Five lead dust wipe samples were above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). Detectable levels of lead were found in all samples of peeling paint

collected. One housekeeping problem was identified with stacked boxes in the Garage. Asbestos-containing floor tile was identified. These concerns are discussed in Sections 4 through Section 8.

Tables

Table 1. Illumination Measurements
The New York State Readiness Center
Connecticut Street, New York
Date of Sampling: September 11, 2008

Location	Luminance (fc)[1]	Standard (fc)	Standard Met (Y/N)
BASEMENT			
Room B-15 (Men's Restroom)	2 – 7	7	N
Firing Range	11 – 70	30	N
Basement Hallway	13 – 15	7	Y
Room B-30 (Moral Support Room)	28 – 35	30	N
Room B-8a (Storage)	13 – 20	5	Y
Room B-20 (Boiler Room)	12 – 32	30	N
Room B-25 (Kitchen)	34 – 42	50	N
Room B-24 (Mess Hall)	30 - 36	30	Y
FIRST FLOOR			
Room 1-6 (Recruiter's Office)	26 – 32	50	N
Room 1-17 (Administration Office)	33 – 36	30	Y
First Floor Hallways	4 – 10	7	N
Room 1-21 (Grand Court)	10 – 30	30	N
Garage	1 – 2	75	N
Room GS-6 (Garage Storage)	25 – 32	30	N
Room 1-T-1 (Bathroom)	19 – 20	7	Y
Room 1-8 (Freedom Hall)	38 – 40	30	Y
Room 1-5 (Men's Latrine)	36 – 40	7	Y
Room 1-4 (Women's Lounge)	42 – 43	30	Y
Front Desk Area (1-1)	22 – 31	30	N
Room 1-T-2 (Office)	51 – 52	50	Y
SGT Derouche's Office	31 – 32	50	N
Room 1-15 (Office)	30 – 35	50	Y
Room 1-13 (BSTB-HHC)	24 – 28	30	N
Room 1-11(BSTB-C CO)	28 – 29	30	N
Room 1-10 (Club Room)	18 – 25	30	N
Room 1-12d	16 – 21	30	N

Table 1. Illumination Measurements
The New York State Readiness Center
Connecticut Street, New York
Date of Sampling: September 11, 2008

Location	Luminance (fc)[1]	Standard (fc)	Standard Met (Y/N)
Room 1-2 (State Break Room)	31 - 38	10	Y
SECOND FLOOR			
Regimental Parlor	22 – 41	30	N
Second Floor Hallways	2 – 15	7	N
Room 2-2 (Office)	34 – 36	50	N
Room 2-2c (Office)	6 – 38	50	N
Room 2-2e (Office)	38	50	N
Room 2-5 (Male Latrine)	60 – 80	7	Y
Room 2-6 (Officers' Club Room)	18 – 50	30	N
Room 2-6c (Kitchen)	30 – 31	50	N
Room 2-9 (Office)	30 – 33	50	N
Room 2-8 (Office)	29 - 32	50	N
THIRD FLOOR			
Gym 3-1	32 – 36	30	Y
Room 3-2 (Nautilus Room)	34	30	Y
Room 3-4 (Fitness Room)	36 – 42	30	Y
Room 3-14 (Classroom)	14 – 35	30	N
Room 3-7a (Hallway)	9 – 18	7	Y
Room 3-6 (Office)	35 – 40	50	N
Room 3-10d (Office)	46	50	N
Room 3-10e (Office)	67 – 69	50	Y
Room 3-10f (Office)	26	50	N
Room 3-11a (Office)	39 – 42	50	N
Room 3-11	25 – 28	30	N
Room 3-12	36 - 45	30	Y

[1] fc = foot candles

The readings were taken with a Cal-Light 400, factory calibrated on June 17, 2008.

The standards listed in Table 1 are from ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities)

Table 2. Indoor Air Quality Measurements
Connecticut Street Readiness Center
Buffalo, New York
Date of Sampling: September 11, 2008

Location	Occupants Present in Area	CO_2 (ppm)[1]	CO (ppm)	Relative Humidity (%)	Temperature (° F)
Basement					
Firing Range	1	450 – 530	<1	57 – 58	70 – 70.5
Room B-30 (Moral Support Room)	1	530 – 580	<1	41 – 42	73 - 74
First Floor					
Room 1-21 (Grand Court)	2	400 – 440	<1	46 – 47	70 – 70.5
Garage F-16	6	390 – 410	<1	46 – 47	67 - 68
Second Floor					
Regimental Parlor	1	410 – 545	<1	48 – 49	74 – 74.5
Third Floor					
Gym 3-1	1	380 – 440	<1	48 – 49	72.5 – 73
Room 3 – 14 (Classroom)	1	430 – 465	<1	43 - 44	73 - 74

CO_2, CO, relative humidity and temperature measurements were taken with a TSI Q-Trak Plus Model 8554, calibrated February 2008.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommendations that indoor CO_2 concentration be maintained at a level that is less than 700 ppm above outdoor concentration.

National Ambient Air Quality Standard (NAAQS) recommendation for ambient CO: below 9 ppm

Occupational Safety and Health Administration Permissible Exposure Limit for CO: 50 ppm as an 8-hour time-weighted average (TWA)

American Conference of Governmental Industrial Hygienists Threshold Limit Value for CO: 25 ppm as an 8-hour time-weighted average (TWA)

Table 3. Peeling Paint Chip Sample Results
Connecticut Street Readiness Center
Buffalo, New York
Date of Sampling: September 11, 2008

Sample Number	Location	Results (%)[1]
9112008 – 50	Room 1-8 (Freedom Hall) – peeling white paint on wall	0.029
9112008 – 51	Room 1-8 (Freedom Hall) – peeling white paint on closet wall	37
9112008 – 52	Room 1-4 (Women's Lounge) peeling cream paint on wall	15
9112008 – 53	Room B-15 (Men's Restroom) – peeling cream paint on wall	0.41
9112008 – 54	Firing Range – peeling cream paint on wall	0.25
9112008 – 55	Basement Hallway – peeling cream paint	0.74
9112008 – 56	Room 3-14 (Classroom) – peeling cream paint on wall	1.7
9112008 – 57	Hallway 3-7a – peeling white paint on ceiling	26
9112008 – 58	Room 3-10f (Office) – peeling white paint on walls and ceiling	0.032
9112008 - 59	Room 3-11a (Office) – peeling cream paint on wall	11

[1] Results cited as % lead by weight

The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight.

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 7420

Table 4.Lead Wipe Samples
Connecticut Street Readiness Center
Buffalo, New York
Date of Sampling: September 11, 2008

Sample Number	Location	Sample Area[1]	Results (µg/ft²)[2]	NGB Standard (µg/ft²)[3]
9112008 - 01	Room 1-6 – Recruiter's Office Desk	12 in x 12 in	140	<200
9112008 - 02	Rom 1-17 – Administrative Office desk	12 in x 12 in	24	<200
9112008 - 03	Grand Court – front left floor	12 in x 12 in	19	<200
9112008 – 04	Grand Court – rear back right floor	12 in x 12 in	17	<200
9112008 - 05	Grand Court – rear back left floor	12 in x 12 in	<12	<200
9112008 – 06	Grand Court – shelf	12 in x 12 in	17	<200
9112008 – 07	Grand Court – left middle floor	12 in x 12 in	42	<200
9112008 – 08	Hallway 1-14b – stored ladder	12 in x 12 in	340	<200
9112008 – 09	Room 1-8 (Freedom Hall) – area near fireplace	12 in x 12 in	24	<200
9112008– 10	Room 1-10 (Office) – top of filing cabinet	12 in x 12 in	33	<200
9112008 – 11	Firing Range – bullet trap area	12 in x 12 in	48000	<200
9112008 – 12	Firing Range – chair	12 in x 12 in	99	<200
9112008 – 13	Firing Range – floor near bullet trap	12 in x 12 in	4000	<200
9112008 – 14	Hallway floor outside the Firing Range	12 in x 12 in	440	<200
9112008 – 15	Firing Range – floor near center right wall	12 in x 12 in	2500	<200
9112008 – 16	Kitchen B-25 – table top	12 in x 12 in	57	<200
9112008 – 17	Gym 3-1 – right corner floor	12 in x 12 in	130	<200
9112008 – 18	Classroom 3-14 – desk in rear	12 in x 12 in	42	<200
9112008 – 19	Room 3-11a (Office) – floor under damaged ceiling	12 in x 12 in	150	<200
9112008 – 20	Room 2-6c – (Kitchen) – top of	12 in x 12 in	14	<200

	ice machine			

1 Sample area was 12 in x 12 in with a total sample area of 144 in² or at total of 1 ft²

2 Results are presented as microgram per square feet (µg/ft²)

3 Standard is based on the NGB Region North IH office policy

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 600/R-93/200.

The sample results were compared to the NGB Region North IH Office Policy of maintaining <200 µg/ft2

Table 5.General Area Air Samples for Lead
New York State Readiness Center
Connecticut Street, New York
Date of Sampling: September 11, 2008

Sample Number	Location	Sample Information			Results (ug/m³) [2]
		Time Sampled / Minutes	Flow Rate (lpm)[1]	Volume (liters)	
9112008 – A1	Room 1-6 (Recruiters Office)	433	2	866	<3.4
9112008 – A2	Room 1-17 (Administration Office)	434	2	868	<3.5
OSHA PEL (8-hour TWA)[4]					50
ACGIH TLV (8-hour TWA)[5]					50

The results from the air samples collected over the 7.2 hour period were compared directly to the OSHA PEL, which is based on an 8-hour Time-Weighted Average, because the airborne concentration of lead is not expected to change in the office areas sampled.

1 lpm = liters of air per minute

2 ug/m³ = micrograms per cubic meter

3 ND = Parameter not detected above LOD

4 U.S. Occupational Safety and Health Administration Permissible Exposure Limit (8-hour Time-Weighted Average)

5 American Conference of Governmental Industrial Hygienists Threshold Limit Value (8-hour Time-Weighted Average)

Table 6. Bulk Suspect Asbestos Containing Material (ACM) Samples
New York State Readiness Center
Geneva, New York
Date of Sampling: September 8, 2008

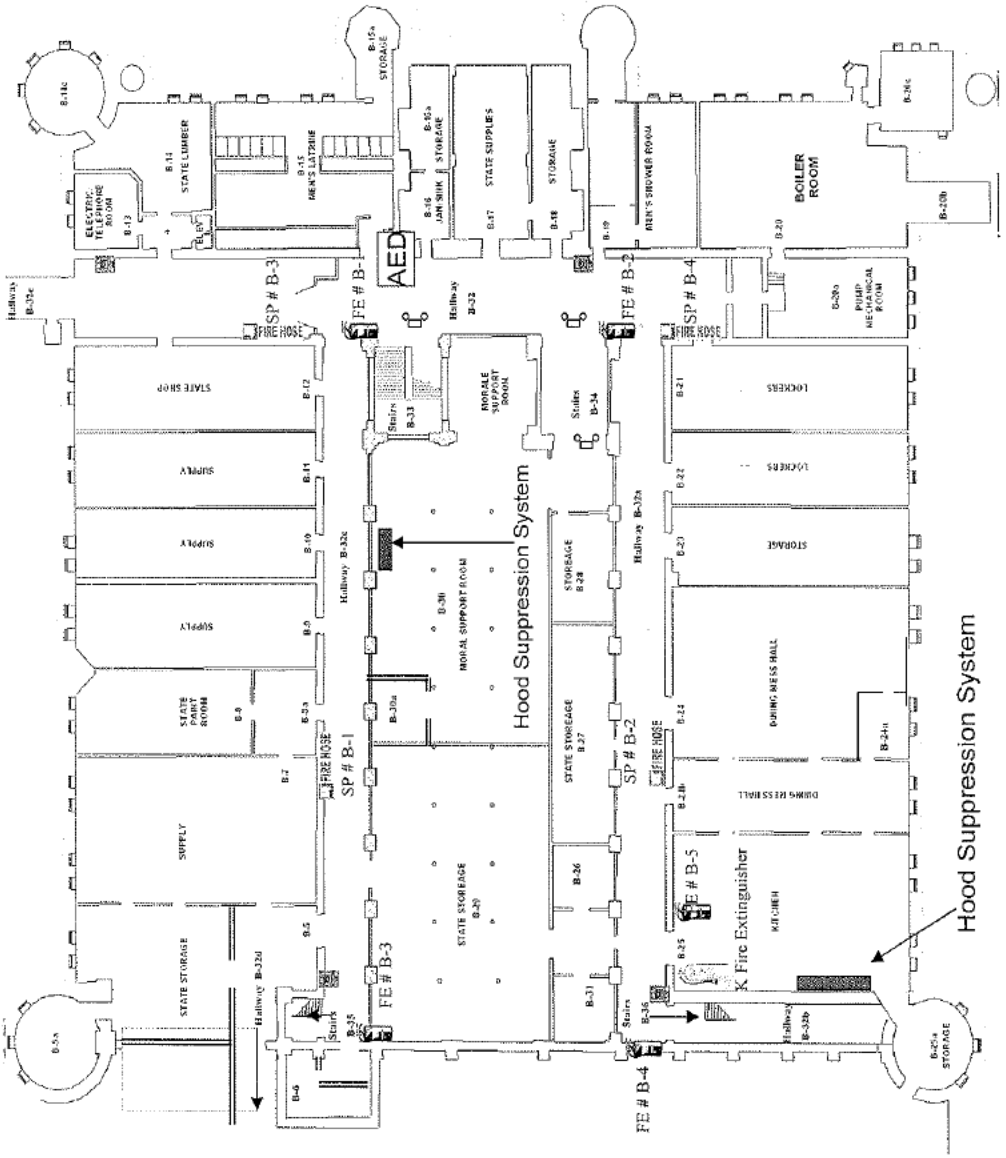
Sample Number	Location	Results (%)/Type[1]
9112008-80	12 in x 12 in damaged ceiling tile in the Firing Range	0% Chrysotile (No Asbestos Detected)
9112008-81	9 in x 9 in brown floor tile with tan and peach flecks in Room B-30 (Moral Support Room)	6% Chrysotile

[1]Results cited as % asbestos

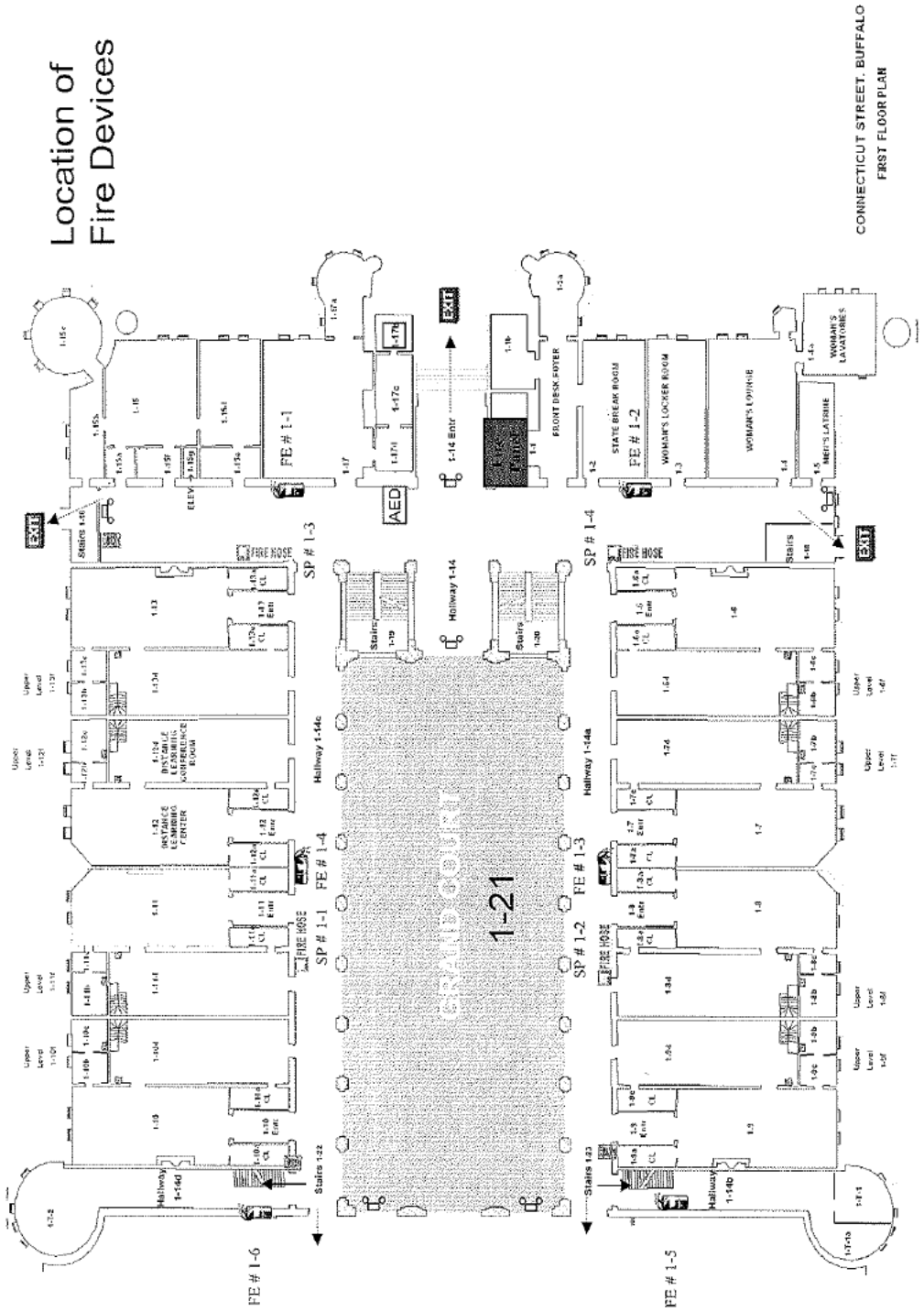
According to 29 CFR 1910.1001(b), Asbestos-containing material means any material containing more than 1% asbestos.

Appendix A
Building Layout

CONNECTICUT STREET, BUFFALO
BASEMENT FLOOR PLAN

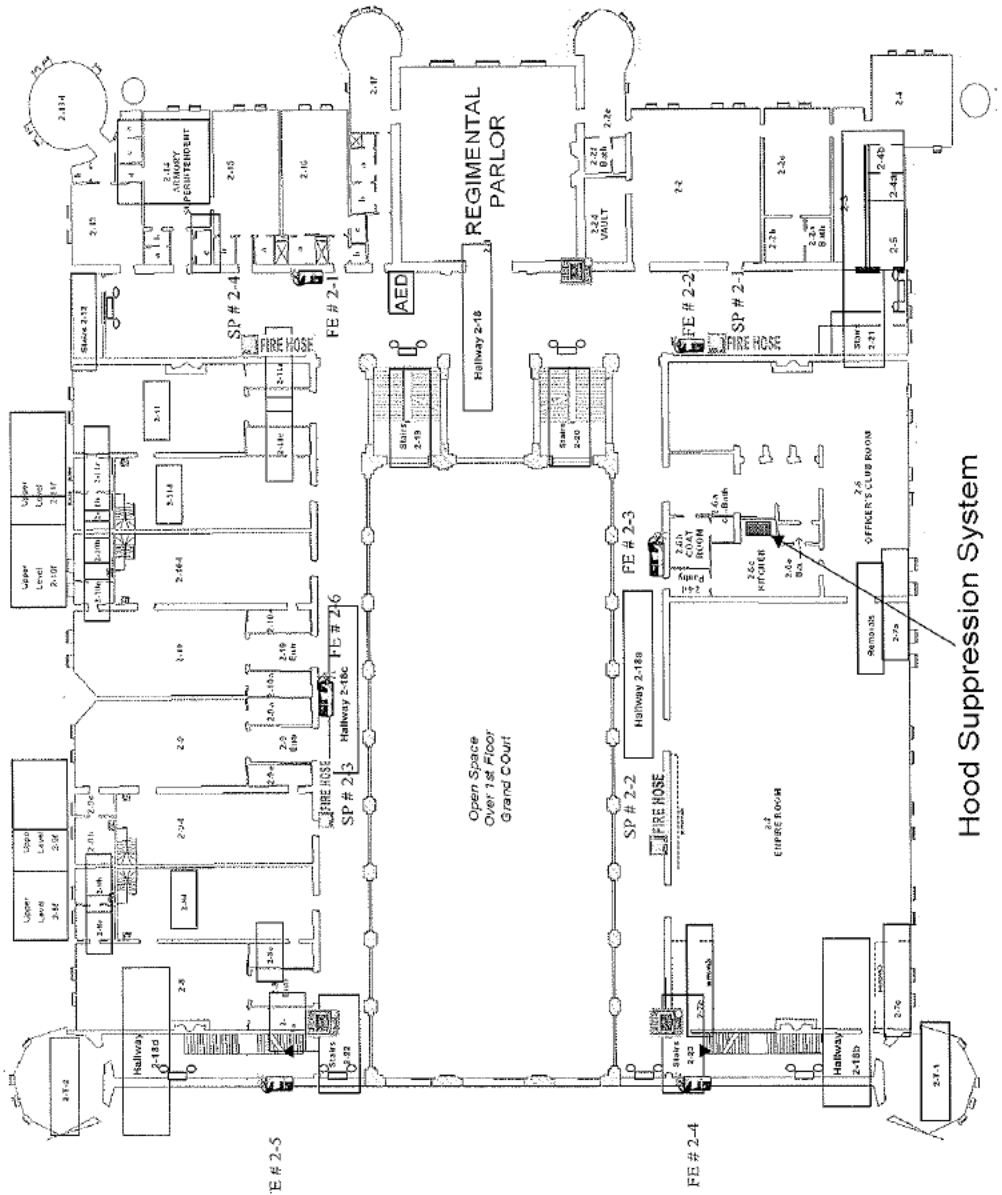


Location of Fire Devices



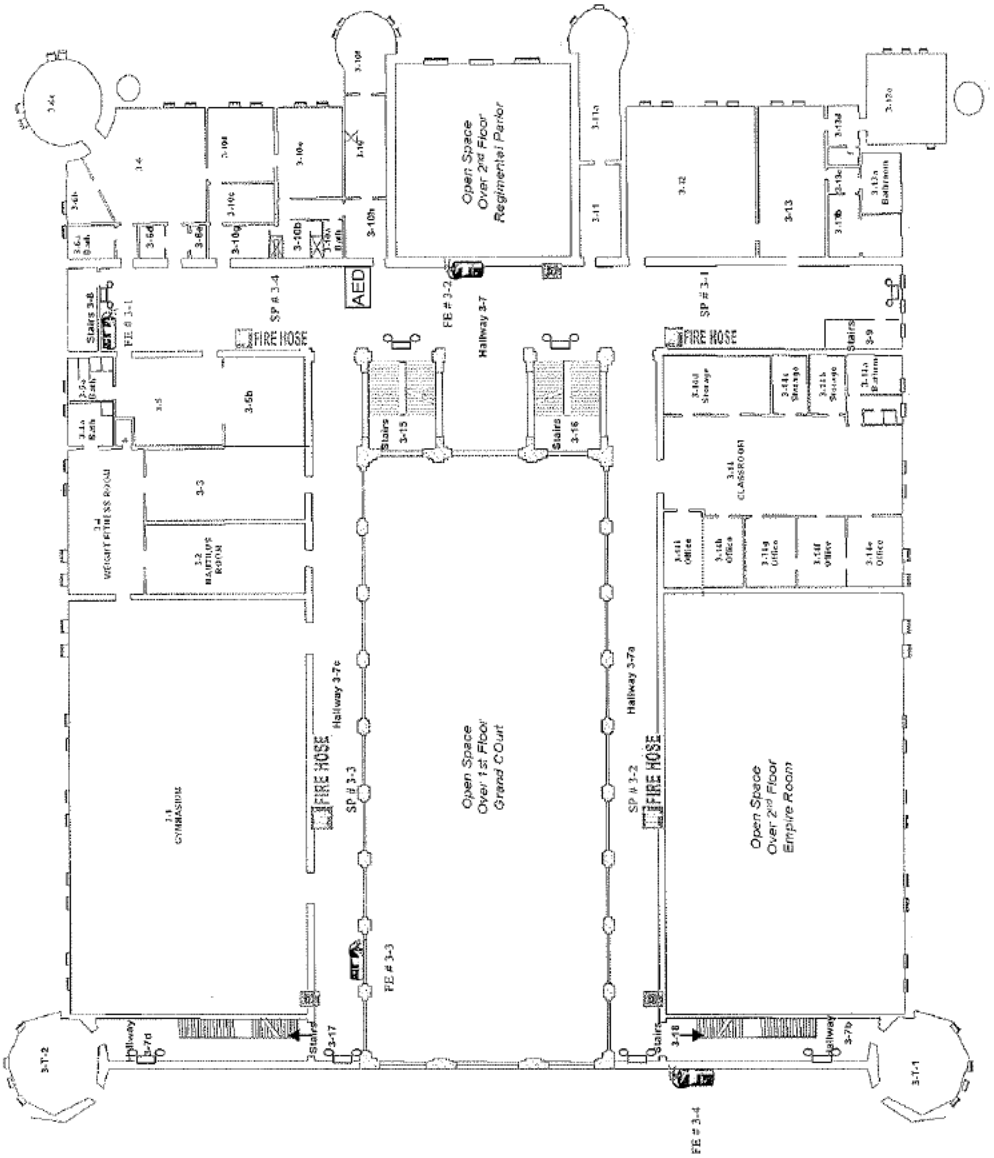
Location of Fire Devices

CONNECTICUT STREET, BUFFALO
SECOND FLOOR PLAN



Location of Fire Devices

CONNECTICUT STREET, BUFFALO
THIRD FLOOR PLAN



Appendix B
Sampling Sheets and Laboratory Results for Lead Paint Chip Samples, Lead Dust Wipe Samples, Asbestos Samples, and Lead Air Samples

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 178318

Mailing/Billing Information:
1. Client Name: NGB Region North JH office
2. Address 1: 301 - JH old Bay Lane
3. Address 2: Havre De Grace, MD 21078
4. Address 3:
5. Phone #: 410-942-0273 x5 Fax #: 410-942-0254

Submittal Information:
1. Job Name: Connecticut Street Armory
2. Job Location: Buffalo NY
3. Job #: 300 P.O. #:
4. Contact Person: [redacted] @ [redacted] 264-6230
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	❑ Include COC/Field Data Sheets with Report
❑ 24 Hours Time Due:	❑ Next Day ❑ 5 Day +	❑ Email: @
Comments:	❑ 2 Day Date Due: Standard Turnaround	❑ Fax:
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ Verbals:

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
❑ NIOSH 7400 ____ (QTY)
❑ Fiberglass ____ (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
❑ AHERA ____ (QTY)
❑ NIOSH 7402 ____ (QTY)
❑ Other (specify ____) ____ (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate 2 (QTY)
❑ EPA Point Count ____ (QTY)
❑ NY State Friable 198.1 ____ (QTY)
❑ Grav. Reduction ELAP 198.6 ____ (QTY)
❑ Other (specify ____) ____ (QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield ____ (QTY)
❑ NY State PLM/TEM ____ (QTY)
❑ Residual Ash ____ (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
❑ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
❑ Quan. (s/area)Dust D6480-99 ____ (QTY)
TEM Water
❑ Qual. (pres/abs) ____ (QTY)
❑ ELAP 198.2/EPA 100.2 ____ (QTY)
❑ EPA 100.1 ____ (QTY)
❑ All samples received in good condition unless otherwise noted. (TEM Water samples ____ °C)

Lead Analysis
❑ Paint Chip 10 (QTY)
❑ Dust Wipe (wipe type ghost wipe) 20 (QTY)
❑ Air 3 (QTY) 2 L/Min
❑ Soil/Solid ____ (QTY)
❑ TCLP ____ (QTY)
❑ Drinking Water ____ (QTY)
❑ Waste Water ____ (QTY)
❑ Dust Wipe Furnace (wipe type ____) ____ (QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap ____ (QTY) ❑ Bulk ____ (QTY)
❑ Surface Swab ____ (QTY) ❑ Surface Vacuum Dust ____ (QTY)
❑ Surface Tape ____ (QTY) ❑ Other (Specify ____) ____ (QTY)

SAMPLE INFORMATION					ANALYSIS							MATRIX					CLIENT CONTACT
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
9112008-01	Room 1-6	9/11/08		1ft²				X				X					Date/Time: Contact: By:
9112008-02	Room 1-17			1				X				X					
9112008-03	Grand Court							X				X					
9112008-04	Grand Court							X				X					
9112008-05	Grand Court							X				X					Date/Time: Contact: By:
9112008-06	Grand Court							X				X					
9112008-07	Grand Court							X				X					
9112008-08	Hallway 1-16							X				X					
9112008-09	Room 1-8							X				X					Date/Time: Contact: By:
9112008-10	Room 1-10							X				X					
9112008-11	Firing Range							X				X					

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ____ / ____ / ____ @ ____ Via: ____ By (Print): ____ Sign: ____
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ____ / ____ / ____ Time: ____ Initials: ____
4. Comments: ____

AMA Analytical Services, Inc.
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4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 178326

Mailing/Billing Information:

1. Client Name: _____
2. Address 1: _____
3. Address 2: _____
4. Address 3: _____
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: Conn St Armory
2. Job Location: _____
3. Job #: _____ P.O. #: _____
4. Contact Person: _____ @ phone # _____
5. Submitted by: _____ Signature: _____

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due: _____ ❑ 24 Hours Time Due: _____ Comments: _____	❑ Immediate ❑ 3 Day ❑ Next Day ❑ 5 Day + ❑ 2 Day Date Due: _____ ❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ Include COC/Field Data Sheets with Report ❑ Email: _____ @ _____ ❑ Fax: _____ ❑ Verbals: _____

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ NIOSH 7400_____(QTY)
❑ Fiberglass_____(QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ AHERA_____(QTY)
❑ NIOSH 7402_____(QTY)
❑ Other (specify_____)_____(QTY)

PLM Bulk
❑ EPA 600 – Visual Estimate_____(QTY)
❑ EPA Point Count_____(QTY)
❑ NY State Friable 198.1_____(QTY)
❑ Grav. Reduction ELAP 198.6_____(QTY)
❑ Other (specify_____)_____(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield_____(QTY)
❑ NY State PLM/TEM_____(QTY)
❑ Residual Ash_____(QTY)

TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust_____(QTY)
❑ Quan. (s/area) Vacuum D5755-95_____(QTY)
❑ Quan. (s/area)Dust D6480-99_____(QTY)

TEM Water
❑ Qual. (pres/abs)_____(QTY)
❑ ELAP 198.2/EPA 100.2_____(QTY)
❑ EPA 100.1_____(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____ °C)

Lead Analysis
❑ Paint Chip_____(QTY)
❑ Dust Wipe (wipe type_____)_____(QTY)
❑ Air_____(QTY)
❑ Soil/Solid_____(QTY)
❑ TCLP_____(QTY)
❑ Drinking Water_____(QTY)
❑ Waste Water_____(QTY)
❑ Dust Wipe Furnace (wipe type_____)_____(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap_____(QTY) ❑ Bulk_____(QTY)
❑ Surface Swab_____(QTY) ❑ Surface Vacuum Dust_____(QTY)
❑ Surface Tape_____(QTY) ❑ Other (Specify_____)_____(QTY)

SAMPLE INFORMATION					ANALYSIS							MATRIX					CLIENT CONTACT
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
9/12008-12	Firing Range	9/11/08		100 cm²				X				X					Date/Time: Contact: By:
9/12008-13	Firing Range							X				X					
9/12008-14	Firing Range							X				X					
9/12008-15	Firing Range							X				X					
9/12008-16	Kitchen B-2E							X				X					Date/Time: Contact: By:
9/12008-17	Gym 3-1							X				X					
9/12008-18	Classroom 3-11							X				X					
9/12008-19	3-11a office/hall							X				X					
9/12008-20	2-6c Kitchen							X				X					Date/Time: Contact: By:
9/12008-50	Freedom Hall							X			X						
9/12008-51	Freedom Hall							X			X						

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: ____/____/____ @ ____ Via: _____ By (Print): _____ Sign: _____
2. Date/Time Analyzed: ____/____/____ @ ____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____/____/____ Time: _____ Initials: _____
4. Comments: _____

AMA Analytical Services, Inc.
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4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 178317

Mailing/Billing Information:
1. Client Name: _____
2. Address 1: _____
3. Address 2: _____
4. Address 3: _____
5. Phone #: _____ Fax #: _____

Submittal Information:
1. Job Name: Conn St Armory
2. Job Location: _____
3. Job #: _____ P.O. #: _____
4. Contact Person: _____ @ phone # _____
5. Submitted by: _____ Signature: _____

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due: _____ ❑ 24 Hours Time Due: _____ Comments: _____	❑ Immediate ❑ 3 Day ❑ Next Day ❑ 5 Day + ❑ 2 Day Date Due: _____ ❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ Include COC/Field Data Sheets with Report ❑ Email: _____ @ _____ ❑ Fax: _____ ❑ Verbals: _____

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ NIOSH 7400_____(QTY)
❑ Fiberglass_____(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ AHERA_____(QTY)
❑ NIOSH 7402_____(QTY)
❑ Other (specify_____)_____(QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate_____(QTY)
❑ EPA Point Count_____(QTY)
❑ NY State Friable 198.1_____(QTY)
❑ Grav. Reduction ELAP 198.6_____(QTY)
❑ Other (specify_____)_____(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield_____(QTY)
❑ NY State PLM/TEM_____(QTY)
❑ Residual Ash_____(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust_____(QTY)
❑ Quan. (s/area) Vacuum D5755-95_____(QTY)
❑ Quan. (s/area)Dust D6480-99_____(QTY)
TEM Water
❑ Qual. (pres/abs)_____(QTY)
❑ ELAP 198.2/EPA 100.2_____(QTY)
❑ EPA 100.1_____(QTY)
❑ All samples received in good condition unless otherwise noted.
(TEM Water samples_____°C)

Lead Analysis
❑ Paint Chip_____(QTY)
❑ Dust Wipe (wipe type_____)_____(QTY)
❑ Air_____(QTY)
❑ Soil/Solid_____(QTY)
❑ TCLP_____(QTY)
❑ Drinking Water_____(QTY)
❑ Waste Water_____(QTY)
❑ Dust Wipe Furnace (wipe type_____)_____(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap_____(QTY) ❑ Bulk_____(QTY)
❑ Surface Swab_____(QTY) ❑ Surface Vacuum Dust_____(QTY)
❑ Surface Tape_____(QTY) ❑ Other (Specify_____)_____(QTY)

SAMPLE INFORMATION					ANALYSIS						MATRIX						CLIENT CONTACT (LABORATORY STAFF ONLY)
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	
911208 - S2	Room 1-4	9/11/08		Lft²				X			X	X					Date/Time: Contact: By:
S3	Room B-15							X			X	X					
S4	Firing Range							X			X	X					
S5	Basement Hall							X			X	X					
S6	Class 3-14							X			X	X					Date/Time: Contact: By:
S7	Hallway 3-7a							X			X	X					
S8	3-10f office							X			X	X					
S9	3-11a office							X			X	X					
911208 S10	Firing Range						X				X						Date/Time: Contact: By:
S1	Moral Supp. Rm						X										
911208 - A1	Room 1-6							X		X							

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ____/____/____ @ ____ Via: _____ By (Print): _____ Sign: _____
2. Date/Time Analyzed: ____/____/____ @ ____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____/____/____ Time: _____ Initials: _____
4. Comments: _____

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 178323

Page 4 of 4

Mailing/Billing Information:

1. Client Name: [illegible]
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: _____ Fax #:

Submittal Information:

1. Job Name: [illegible] Conn St Armory
2. Job Location:
3. Job #: _____ P.O. #:
4. Contact Person: [redacted] Non-Responsive 268-6230
5. Submitted by: _____ Signatur[redacted] Non-Responsive

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	
❑ Immediate Date Due:	❑ Immediate	❑ 3 Day
❑ 24 Hours Time Due:	❑ Next Day	❑ 5 Day +
Comments:	❑ 2 Day	Date Due:
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	

❑ Include COC/Field Data Sheets with Report
❑ Email: _____ @
❑ Fax:
❑ Verbals:

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ NIOSH 7400_____(QTY)
❑ Fiberglass _____(QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ AHERA _____(QTY)
❑ NIOSH 7402 _____(QTY)
❑ Other (specify_____)_____(QTY)

PLM Bulk
❑ EPA 600 – Visual Estimate_____(QTY)
❑ EPA Point Count_____(QTY)
❑ NY State Friable 198.1_____(QTY)
❑ Grav. Reduction ELAP 198.6_____(QTY)
❑ Other (specify_____)_____(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield_____(QTY)
❑ NY State PLM/TEM_____(QTY)
❑ Residual Ash_____(QTY)

TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust_____(QTY)
❑ Quan. (s/area) Vacuum D5755-95 _____(QTY)
❑ Quan. (s/area)Dust D6480-99_____(QTY)

TEM Water
❑ Qual. (pres/abs)_____(QTY)
❑ ELAP 198.2/EPA 100.2_____(QTY)
❑ EPA 100.1_____(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____°C)

Lead Analysis
❑ Paint Chip_____(QTY)
❑ Dust Wipe (wipe type_____)_____(QTY)
❑ Air_____(QTY)
❑ Soil/Solid_____(QTY)
❑ TCLP_____(QTY)
❑ Drinking Water_____(QTY)
❑ Waste Water_____(QTY)
❑ Dust Wipe Furnace (wipe type_____)_____(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap_____(QTY) ❑ Bulk _____(QTY)
❑ Surface Swab_____(QTY) ❑ Surface Vacuum Dust _____(QTY)
❑ Surface Tape_____(QTY) ❑ Other (Specify_____)_____(QTY)

SAMPLE INFORMATION

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
9112008-A2	Room # 1-17	9/11/08						X		X						
9112008-A3	Blank	"						X		X						

CLIENT CONTACT
(LABORATORY STAFF ONLY)

Date/Time: Contact: By:

Date/Time: Contact: By:

Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: ____ / ____ / ____ @ ____ Via: ____ By (Print): ____ Sign: ____
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ____ / ____ / ____ Time: ____ Initials: ____
4. Comments: ____

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead See aihaplp.org for details 100470

NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	Connecticut Street Armory	**Chain Of Custody:**	178318
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Buffalo NY	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	3008-004	**Person Submitting:**	[redacted] Non-Resp
		P.O. Number:	Not Provided	**Date Analyzed:**	10/10/2008 **Report Date:** 10/10/2008

Attention: [redacted] Non-Resp

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0901192	9112008-01	Flame	Wipe	****	1.000	12	ug/ft²	140	ug/ft²	
0901193	9112008-02	Flame	Wipe	****	1.000	12	ug/ft²	24	ug/ft²	
0901194	9112008-03	Flame	Wipe	****	1.000	12	ug/ft²	19	ug/ft²	
0901195	9112008-04	Flame	Wipe	****	1.000	12	ug/ft²	17	ug/ft²	
0901196	9112008-05	Flame	Wipe	****	1.000	12	ug/ft²	< 12	ug/ft²	
0901197	9112008-06	Flame	Wipe	****	1.000	12	ug/ft²	17	ug/ft²	
0901198	9112008-07	Flame	Wipe	****	1.000	12	ug/ft²	42	ug/ft²	
0901199	9112008-08	Flame	Wipe	****	1.000	12	ug/ft²	340	ug/ft²	
0901200	9112008-09	Flame	Wipe	****	1.000	12	ug/ft²	24	ug/ft²	
0901201	9112008-10	Flame	Wipe	****	1.000	12	ug/ft²	33	ug/ft²	
0901202	9112008-11	Flame	Wipe	****	1.000	12	ug/ft²	48000	ug/ft²	
0901203	9112008-12	Flame	Wipe	****	1.000	12	ug/ft²	99	ug/ft²	
0901204	9112008-13	Flame	Wipe	****	1.000	12	ug/ft²	4000	ug/ft²	
0901205	9112008-14	Flame	Wipe	****	1.000	12	ug/ft²	440	ug/ft²	
0901206	9112008-15	Flame	Wipe	****	1.000	12	ug/ft²	2500	ug/ft²	
0901207	9112008-16	Flame	Wipe	****	1.000	12	ug/ft²	57	ug/ft²	
0901208	9112008-17	Flame	Wipe	****	1.000	12	ug/ft²	130	ug/ft²	
0901209	9112008-18	Flame	Wipe	****	1.000	12	ug/ft²	42	ug/ft²	
0901210	9112008-19	Flame	Wipe	****	1.000	12	ug/ft²	150	ug/ft²	

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	Connecticut Street Armory	**Chain Of Custody:**	178318
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Buffalo NY	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	3008-004	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	10/10/2008 **Report Date:** 10/10/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0901211	9112008-20	Flame	Wipe	****	1.000	12	ug/ft²	14	ug/ft²	
0901212	9112008-50	Flame	Paint Chip	****	N/A	0.0092	%Pb	0.029	%Pb	
0901213	9112008-51	Flame	Paint Chip	****	N/A	0.0099	%Pb	37	%Pb	
0901214	9112008-52	Flame	Paint Chip	****	N/A	0.008	%Pb	15	%Pb	
0901215	9112008-53	Flame	Paint Chip	****	N/A	0.01	%Pb	0.41	%Pb	
0901216	9112008-54	Flame	Paint Chip	****	N/A	0.0086	%Pb	0.25	%Pb	
0901217	9112008-55	Flame	Paint Chip	****	N/A	0.0097	%Pb	0.74	%Pb	
0901218	9112008-56	Flame	Paint Chip	****	N/A	0.0096	%Pb	1.7	%Pb	
0901219	9112008-57	Flame	Paint Chip	****	N/A	0.0085	%Pb	26	%Pb	
0901220	9112008-58	Flame	Paint Chip	****	N/A	0.0096	%Pb	0.032	%Pb	
0901221	9112008-59	Flame	Paint Chip	****	N/A	0.0083	%Pb	11	%Pb	
0901222	9112008-A1	Flame	Air	886	N/A	3.4	ug/m³	< 3.4	ug/m³	
0901223	9112008-A2	Flame	Air	868	N/A	3.5	ug/m³	< 3.5	ug/m³	
0901224	9112008-A3	Flame	Air Blank	0	N/A	3	ug/m³	< 3	ug	

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA Environmental Lead See scope/program for details 100470

NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	Connecticut Street Armory	**Chain Of Custody:**	178318
Address:	301-113 Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Buffalo NY	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	3008-004	**Person Submitting:**	Non-Res
		P.O. Number:	Not Provided	**Date Analyzed:**	10/10/2008
Attention:	Non-Re				

Report Date: 10/10/2008

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.
Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these samples.
NY ELAP accreditation applies only to paint chip, wipe, and water samples.

Non-Responsive

Analyst: Non-Responsive **Technical Manager:** Non-Responsive

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	Connecticut Street Armory	**Chain Of Custody:**	178318
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Buffalo NY	**Date Analyzed:**	10/10/2008
	Havre de Grace, Maryland 21078	**Job Number:**	3008-004	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0901225	9112008-80	NAD	--	--	--	--	25	--	30	--	--	45	Beige	Homogeneous	LBP	
0901226	9112008-81	6	6	--	--	--	--	--	--	--	--	94	Black	Homogeneous	LBP	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

[redacted]

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Appendix C
Selected Photographs of the Connecticut Street Readiness Center

Photo 1: The exterior front of the building that houses the Connecticut Street Readiness Center.

Photo 2: The exterior side of the building that houses the Connecticut Street Readiness Center.

Photo 3: A view of the Grand Court inside the Connecticut Street Readiness Center.

Photo 4: 9 x 9 brown floor tile with tan and peach flecks in Room B-30 (Moral Support Room).

Photo 5: A view of the Indoor Firing Range.

Photo 6: Water damaged ceiling tile located in the Firing Range.

Photo 7: Evidence of water damage to the ceiling in Hallway 3-7a.

Photo 8: Evidence of water damage to the ceiling and walls in Room 3-10f (Office).

Photo 9: Water stained ceiling tiles located in Room 2-7 (Empire Room).

Photo 10: Evidence of water damaged ceiling tiles in Room 2-2 (Office).

Photo 11: Boxes are stacked in the garage area and could create a strike hazard.

Appendix D
Risk Assessment Code Determination

RISK ASSESSMENT CODE DETERMINATION

A Risk Assessment Code (RAC) for each hazard identified is provided at the end of each hazard description. The RAC codes are derived using the matrix provided by the National Guard (reference DOD Instruction 6055.1). This process includes three steps:

- Step 1: Determine the Health Hazard Severity Code (HHSC)

A. Exposure Points Assessed

	Exposure Conditions				
		<CT	Occasionally >CT Always <STD	>CT ≤STD	>STD
AER Possible?	No	0	3	5	7
	Yes	1-2	4	6	8

AER – Alternate exposure route, such as skin absorption, ingestion

CT – DoD component threshold that triggers surveillance actions, such as microwatts/cm^2, dB, parts per million (ppm)

STD – DoD exposure limit, such as Threshold Limit Value (TLV) and Permissible Exposure Limit (PEL)

B. Medical Effects Points Assessed

Condition	Points
No medical effect, such as nuisance noise and nuisance odor	2
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability such as metal fume fever	3-4
Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling, irreversible illness or death, such as asbestosis and lung cancer	7-8

C. Determine the HHSC by totaling the points assessed and using the following guide:

Total Points (sum of A and B)	HHSC
13-16	I
9-12	II
5-8	III
0-4	IV

- Step 2: Determine the Mishap Probability Category (MPC)

A. Duration of Exposure Points Assessed

		Length of Exposure		
		1-8 hr/week	>8hr/week not continuous	Continuous
Type of Exposure	Irregular, intermittent	1-2	4-6	----
	Regular, periodic	2-3	5-7	8

B. Number of Exposed Personnel Points Assessed

Number of Exposed Personnel	Points
<5	1-2
5-9	3-4
9-49	5-6
>49	7-8

C. Determine the MPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum A and B)	MPC
14-16	A
10-13	B
5-9	C
<5	D

Step 3: Determine the RAC using the following matrix;

		Mishap Probability Category (MPC)			
		A	B	C	D
Health Hazard Severity Code	I	1	1	2	3
	II	1	2	3	4
	III	2	3	4	5
	IV	3	4	5	5

Appendix E
References

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References

1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
2. Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.
3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.
4. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.
5. Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, October 15, 1990.
6. Army Regulation (AR) 385-10, The Army Safety Program, February 29, 2000.
7. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 10, 1998.
8. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
9. Technical Manual (TM) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.
10. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
11. Industrial Ventilation – A Manual of Recommended Practices, American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
12. ANSI Z358.1 – 2004, Emergency Eyewash and Shower Equipment.
13. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
14. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
15. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2007, "Ventilation for Acceptable Indoor Air Quality".

Prepared for:
National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
Havre De Grace, Maryland




Industrial Hygiene Survey for NYARNG – Connecticut Street Readiness Center 184 Connecticut Street Buffalo, NY 14213

AECOM
August 2012
Document No.: 60269454/Connecticut Street Readiness Center

Prepared for:
National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
Havre De Grace, Maryland

Industrial Hygiene Survey for NYARNG – Connecticut Street Readiness Center 184 Connecticut Street Buffalo, NY 14213

Non-Responsive
Industrial Hygienist

Non-Responsive

Non-Responsive
Northeast District Health & Safety Manager

AECOM
August 2012
Document No.: 60269454/Connecticut Street Readiness Center

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Executive Summary

On July 10, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Connecticut Street Readiness Center facility located at 184 Connecticut Street, Buffalo, New York. Non-Responsive was the point of contact for the facility and provided personnel to accompany AECOM during the survey to provide access and information concerning the Connecticut Street Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated March 2009.

The Connecticut Street Readiness Center is currently staffed by approximately 65 personnel. The facility is configured as an administrative area and a Drill/Assembly Hall.

Personnel at the facility were undertaking normal daily activities, which are administrative in nature, at the time of the survey.

The activities undertaken during the Industrial Hygiene survey included facility descriptions, lead wipe/air sampling, evaluation of housekeeping, illumination studies, ventilation system evaluation, and a review of the physical building condition.

The Connecticut Street Readiness Center is housed in a three story masonry building, consisting of approximately 30% administrative space and 70% Assembly Hall/common areas.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005. Lighting levels in most occupied areas were in compliance with ANSI/ISEA guideline levels. Much of the facility is unoccupied, and lighting in those areas was generally below recommended guidelines.

Wipe samples collected in association with most administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 CFR 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of HUD's acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the floor outside the former firing range indicated levels of lead in excess of 200 ug/ft^2.

No damaged suspect asbestos containing materials were observed during the evaluation. It was reported that extensive abatement has been undertaken at the facility.

Approximately four hundred square feet of peeling lead-based paint was observed in the basement corridor, basement shower room, and 2nd floor locker room. Site maintenance personnel indicated that the facility has planned to have the shower room abated but has not yet selected a contractor.

2 roof leaks were reported by building maintenance personnel, although neither water damage nor visible mold growth was observed during the survey. Water intrusion is a mold growth risk factor.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a boiler room that feeds radiant heaters throughout the building. There is no HVAC system that provides fresh air from the building exterior in administrative areas.

1.0 Facility Description and Operations

The Connecticut Street Readiness Center is an administrative facility within a masonry structure constructed in 1898. The building consists of administrative space surrounding a centrally located assembly hall. Interior spaces are generally finished with painted block, plaster, acoustical drop ceilings, hardwood flooring, and floor tile.

The primary activity at the Connecticut Street Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Connecticut Street Readiness Center is currently staffed by approximately 65 personnel. Vehicle maintenance activities are undertaken at FMS-10 which is located in the rear portion of the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the former firing range, the Assembly Hall, and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. According to site personnel the rifle range was abated previously. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

The following table presents the results of the lead wipe sampling conducted at the facility.

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
NY-CRC-01	Assembly Hall Floor – North	<110 ug/ft^2
NY-CRC-02	Assembly Hall Floor – South	<110 ug/ft^2
NY-CRC-03	Assembly Hall Sill	<110 ug/ft^2
NY-CRC-04	Kitchen	<110 ug/ft^2
NY-CRC-05	Office	<110 ug/ft^2
NY-CRC-06	Former Bullet Trap Area	<110 ug/ft^2
NY-CRC-07	Former Range Floor	170 ug/ft^2
NY-CRC-08	Outside Former Range on Floor	240 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Lead in excess of the action level of 200 micrograms per square foot (ug/ft^2) per NG-PAM 420-15 was detected in a wipe sample collected on the floor outside of the former range. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Ambient air sampling for lead was conducted in two normally occupied areas of the facility.

Table 2-2: Lead Air Sample Results

Sample Number	Sample Location	Lead Concentration
NY-CRC-01A	Assembly Hall – North	<26ug/m^3
NY-CRC-02A	Assembly Hall - South	<27 ug/m^3

ug/m^3 = Micrograms per cubic meter of air.

None of the air samples collected indicated the presence of airborne lead above detectable limits. For reference, the OSHA Action Level for lead is 30 micrograms per cubic meter of air (ug/m^3) and the Permissible Exposure Limit (PEL) is 50 ug/m^3. Laboratory analytical results are presented in Appendix C.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. The paint on the walls appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM observed damaged and peeling paint in the Basement corridor, Basement Shower room, and 2nd floor locker room ceiling the ceiling during this evaluation. Site maintenance personnel indicated that the paint has been sampled previously and found to be lead-containing. Approximately 400 square feet of this material is present in those areas. Site personnel indicated that abatement of these areas is planned.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged suspect asbestos containing materials (ACM) in readily accessible areas of the Connecticut Street Readiness Center during this survey. Thermal system piping is typically covered in fiberglass insulation with associated fittings generally in good condition. It was reported that an extensive asbestos abatement project had been undertaken at the facility in previous years.

Other typical miscellaneous building materials observed but not sampled include floor tiles and associated mastic, cove base and associated mastic, ceiling tiles, drywall, and window glazing compound and caulks.

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion or visible mold growth during this survey. However, according to site personnel there are two roof leaks. Water intrusion is a mold growth risk factor.

3.1.4 Housekeeping

The Connecticut Street Readiness Center was observed to be generally clean and orderly during this assessment. AECOM did not observe dust accumulation on readily accessible horizontal surfaces within areas commonly used in the facility.

3.1.5 Indoor Air Quality/ Ergonomics

The Administration Section contains general office space. The Administration Section is generally utilized by all of the Connecticut Street Readiness Center staff members. No Indoor Air Quality concerns were noted by the Connecticut Street Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. Temperatures in a second floor office were elevated. The facility is not mechanically air-conditioned.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Exterior – Baseline	0.5	381	70.6	58.3
Security Office	1.3	642	78.3	56.6
Office 117	1.0	505	78.1	45.9
Vet's club	0.2	526	76.8	55.2
Assembly Hall	0.4	500	77.7	54.1
2nd Floor Office – Southwest	0.4	508	77.9	54.1
2nd Floor Office - East	0.7	555	80.2	46.4
3rd floor southeast office	1.0	698	78.3	40.1

Table 3-1 Guidelines:
Carbon Monoxide: Office/Warehouse Space – 9 ppm based on United States Environmental Protection Agency's National Ambient Air Quality Standard.
OSHA Permissible Exposure Limit (PEL) = 50 ppm. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit value (TLV) = 25, ppm.
Carbon Dioxide: Office Space -Approximately 700 ppm above background (Derived from American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 62.1-2010). Not Applicable to warehouse and vehicle maintenance bays.
Relative Humidity: Mechanically air-conditioned space – Maximum 65% (Derived from ASHRAE Standard 62.1-2010 – 5.10.1).
Temperature: Winter (clothing insulation = 1.0 clo) Relative humidity 30-60% - Temp - 68 – 75°F
Summer Temp - 73 – 79°F. (Derived from ASHRAE Standard 55-2010)

Connecticut Street Readiness Center personnel did not report any ergonomics issues or concerns. Office furniture and accessories designed to promote ergonomically correct behaviors were observed.

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

Potential for contamination of clean air sources was observed in the facility. The rear portion of the building is used for vehicle storage, as well as housing FMS-10.

The Connecticut Street Readiness Center is heated by a radiant heating system fed by a boiler located in the boiler room that is in the basement. Supply and return air is not provided by mechanical means. Outdoor air is provided in the building through open windows and doors.

4.1.2 HVAC Maintenance

There was no active ventilation system.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in some areas and inadequate in others. Lighting levels in most occupied areas were in compliance with ANSI/ISEA guideline levels. Much of the facility is unoccupied, and lighting in those areas was generally below recommended guidelines.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Former Range (Storage)	42.6	Y	30
Basement Corridor	24.9	Y	10
Family Services Lounge	62.3	Y	10
Kitchen	56.8	Y	50
Boiler Room	33.6	Y	30
1st Floor Office	52.0	Y	50
1st Floor Office (SE Corner)	53.6	Y	50
1st Floor Office – East	51.9	Y	50
1st Floor Office – East	37.5	N	50
Vet's club	32.1	Y	10
Vet's club lounge	5.1	N	10
Assembly Hall	22-48	Y	30
1st Floor Locker/Storage	3.5	N	7
1st Floor Office – West	55.5	Y	50
1st Floor Office – West	47.9	N	50
Security Office	52.7	Y	50
Break area next to security	32.1	Y	10
2nd Floor Office - East	62.9	Y	50
2nd Floor locker room	33.1	Y	7
2nd Floor Office - East	68.8	Y	50
2nd Floor Office - East	41.0	N	50
2nd Floor Office – Southeast	50.9	Y	50
Battalion CMDR Office	72.3	Y	50
2nd floor corridor	13.5	Y	5
2nd Floor Office – Southwest	47.3	N	50
2nd floor great hall	17.0	N	30
3rd floor gymnasium	45.0-127	Y	30
Weight room 1	39.6	Y	30
Weight room 2	73.0	Y	30
3rd floor southeast office	51.6	Y	50
3rd floor south center office	32.0	N	50
3rd floor south center office	66.8	Y	50
3rd floor storage west	34.0	N	30
Office Lighting (ANSI/ISEA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

FMS-10 is located in the rear portion of the Connecticut Street Readiness Center. The rear portion of the building is also used for vehicle storage. Engineering controls and PPE was observed at the facility in FMS-10, which is located in the rear basement portion of the facility. There is a newly installed Local Exhaust Ventilation system in the FMS, as well as a Carbon Monoxide detection system. An Industrial Hygiene survey of the FMS was completed on July 10, 2012.

FMS-10, which is located in the rear of the basement section of the Connecticut Street Readiness Center is tasked with maintenance and repair of vehicles routinely used by NYARNG personnel during drill weekends. The primary activity at FMS-10 is routine maintenance and repair of vehicles, including but not limited to vehicle brake repair, oil/battery changes, minor engine repairs and adjustments, minor welding and soldering, and spot painting (e.g., lettering, markings, etc.). Vehicle maintenance and repair activities primarily include the use of hand and pneumatic tools. Gas or electric-arc welding may be conducted in place on the vehicle or benchtop locations. Welding operations are extremely limited. Chemical usage includes handling of typical automotive fluids (e.g., engine oils, transmission fluids, hydraulic fluids, etc.), small size containers of paints (e.g., spray cans), acids in batteries, degreasing fluids, and other solvents.

7.0 Conclusions and Limitations

AECOM has conducted this survey in accordance with applicable OSHA methods and standard industrial hygiene practice. The following conclusions were based on the observations and assessments of activities that occurred during the on-site evaluation:

Housekeeping is performed regularly at the Connecticut Street Readiness Center.

Approximately four hundred square feet of peeling lead-based paint was observed in the basement corridor, basement shower room, and 2nd floor locker room. Site maintenance personnel indicated that the facility has planned to have the shower room abated but has not yet selected a contractor.

2 roof leaks were reported by building maintenance personnel. Neither water damage nor visible mold growth was observed by AECOM during the survey. Water intrusion is a mold growth risk factor.

Lighting levels in most occupied areas were in compliance with ANSI/ISEA guideline levels. Much of the facility is unoccupied, and lighting in those areas was generally below recommended guidelines.

Air samples collected and analyzed did not indicate quantifiable levels of airborne lead.

Wipe samples collected in association with most administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 CFR 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of HUD's acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the floor outside the former firing range indicated levels of lead in excess of 200 ug/ft^2.

AECOM provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Bureau – Army National Guard. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

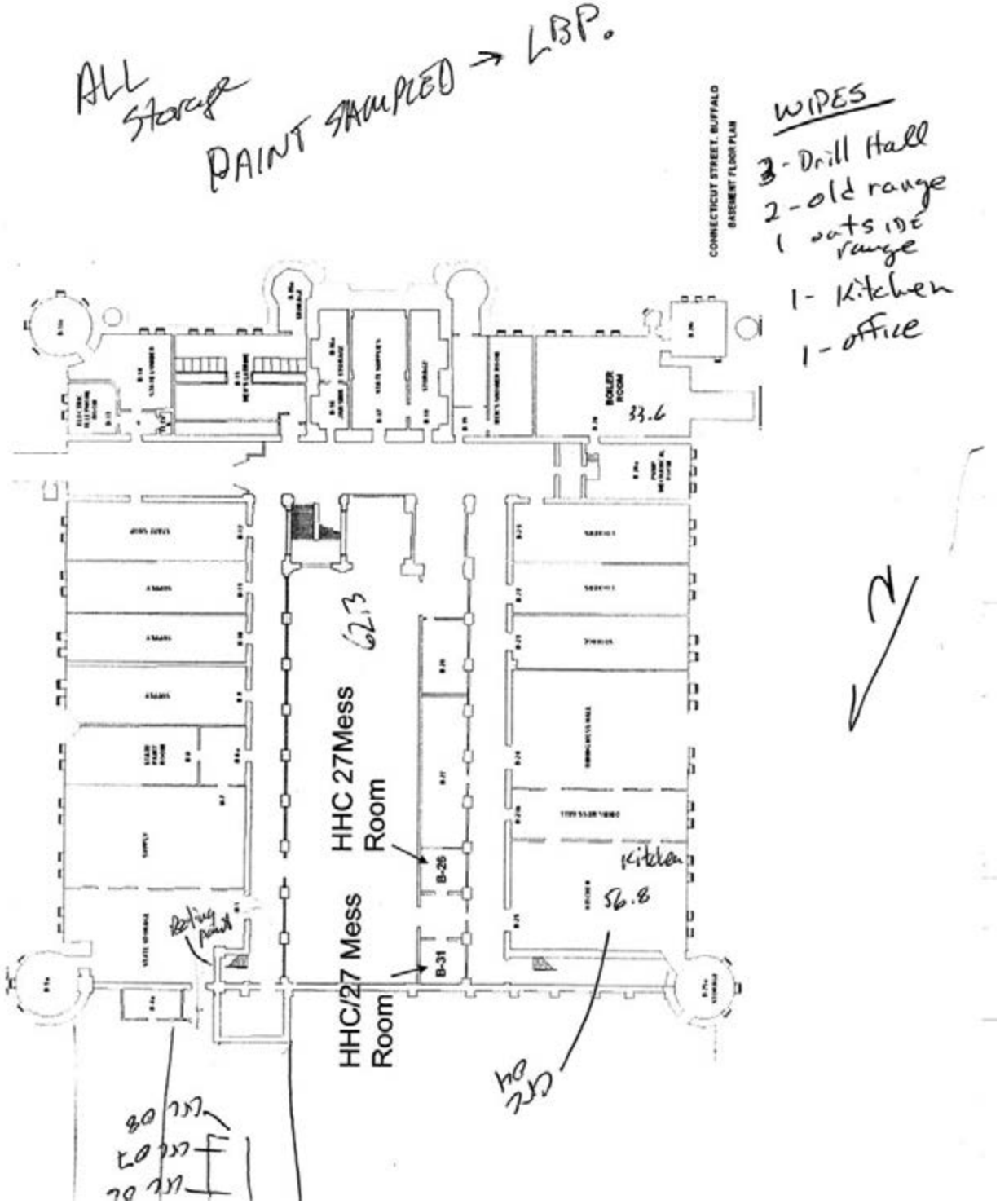
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during AECOM's inspection of the site.

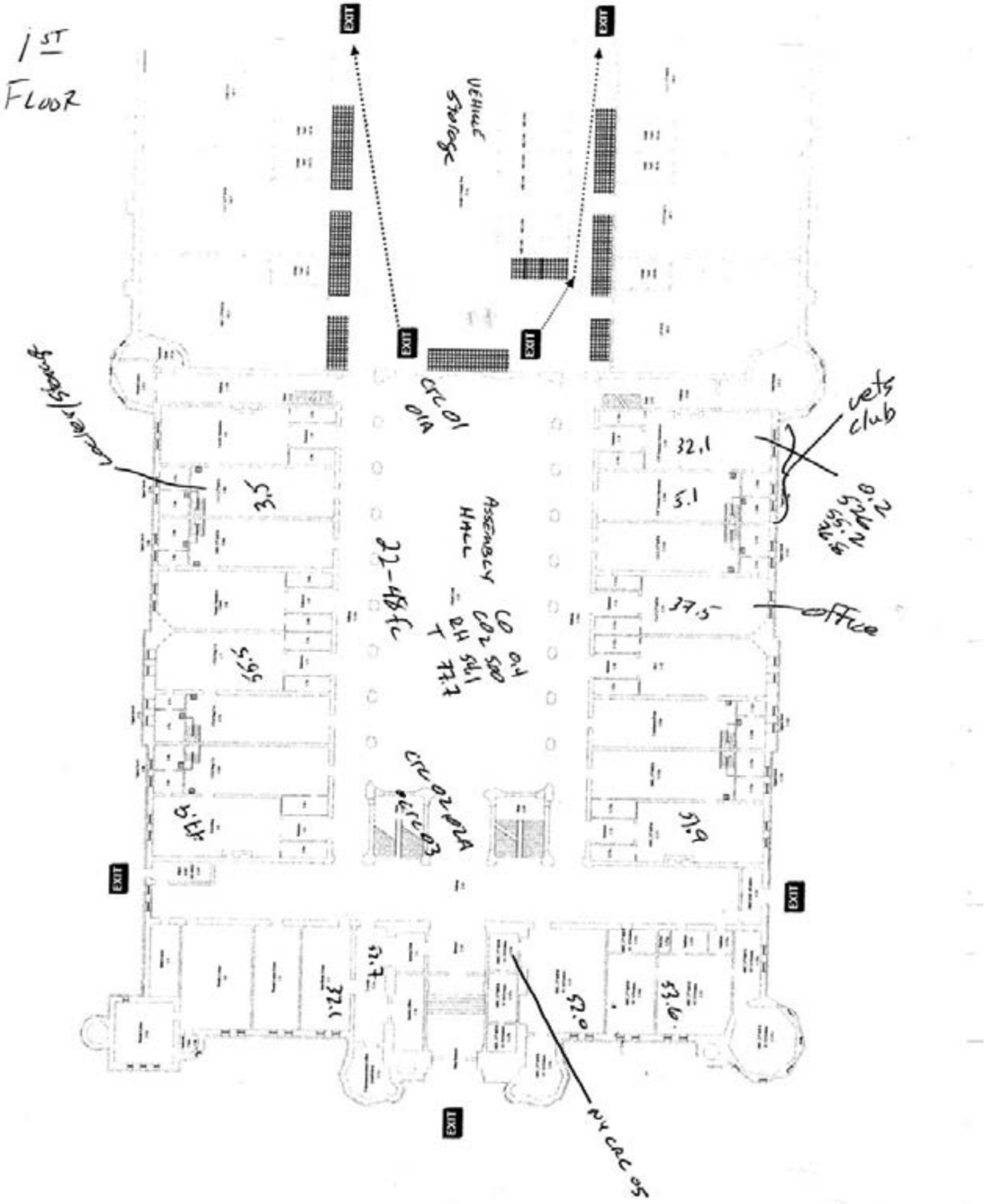
Appendix A

Connecticut Street Readiness Center Facility Layout

AECOM


ALL Storage
PAINT SAMPLED → LBP.
WIPES
3 - Drill Hall
2 - old range
1 outside range
1 - kitchen
1 - office
CONNECTICUT STREET, BUFFALO
BASEMENT FLOOR PLAN
BOILER ROOM
33.6
HHC 27Mess Room
HHC/27 Mess Room
B-26
B-31
Kitchen
56.8
62.3
Peeling paint

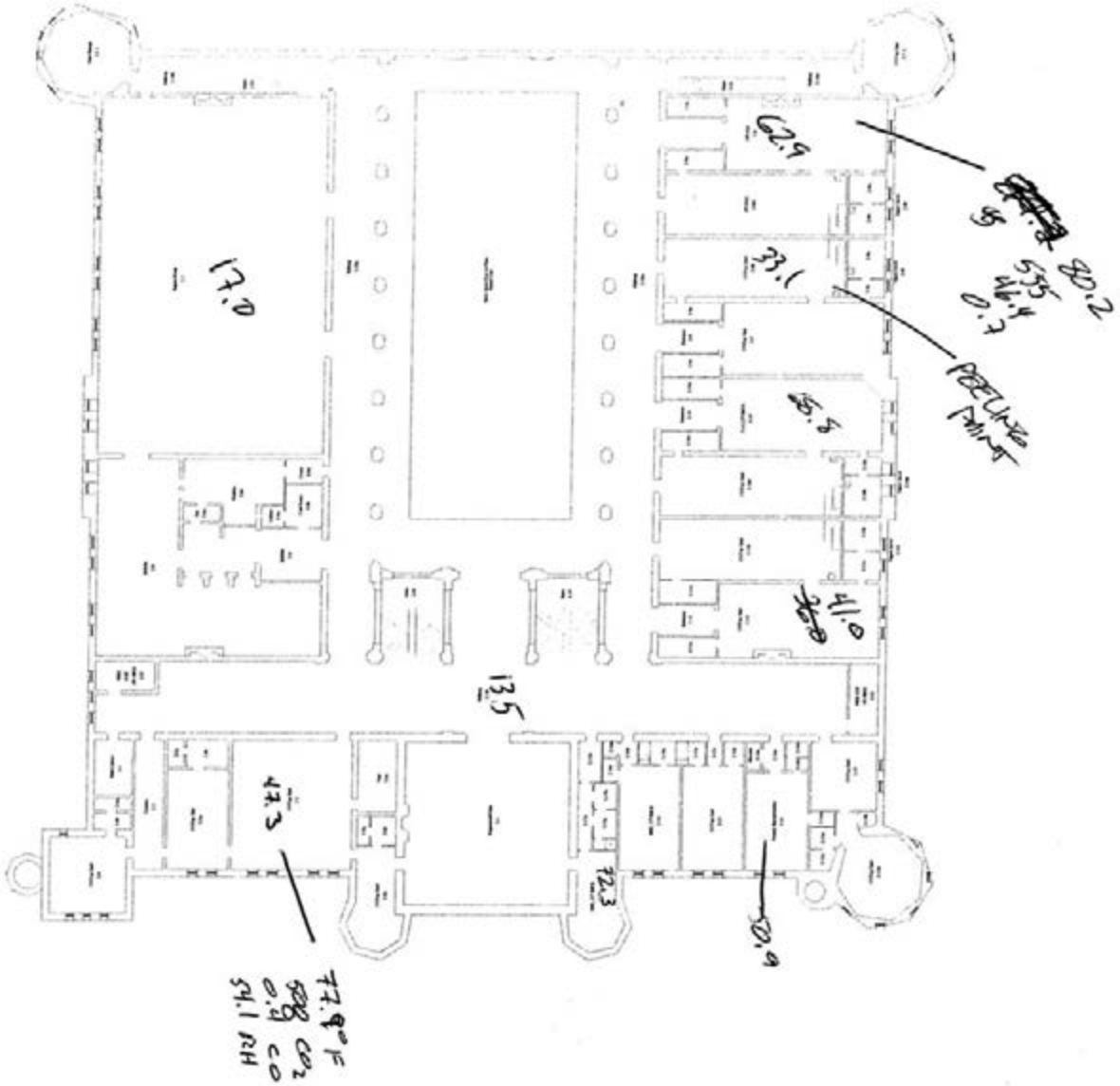
AECOM

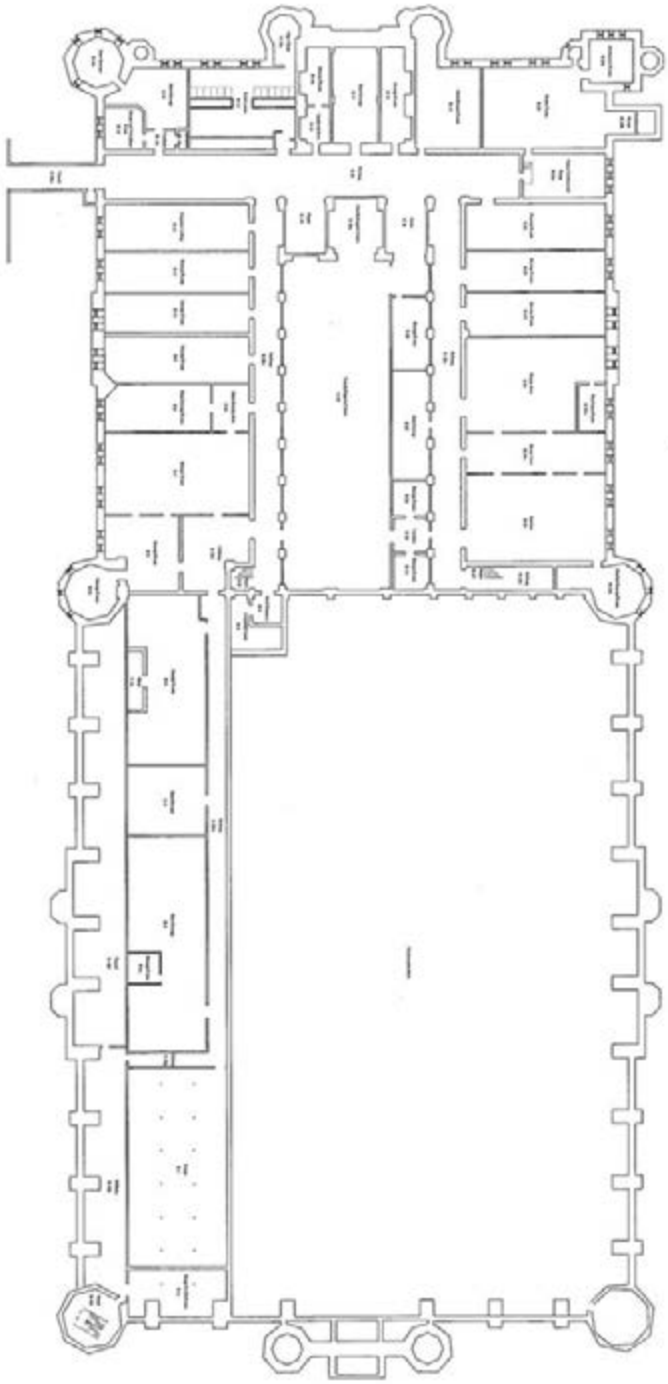


August 2012

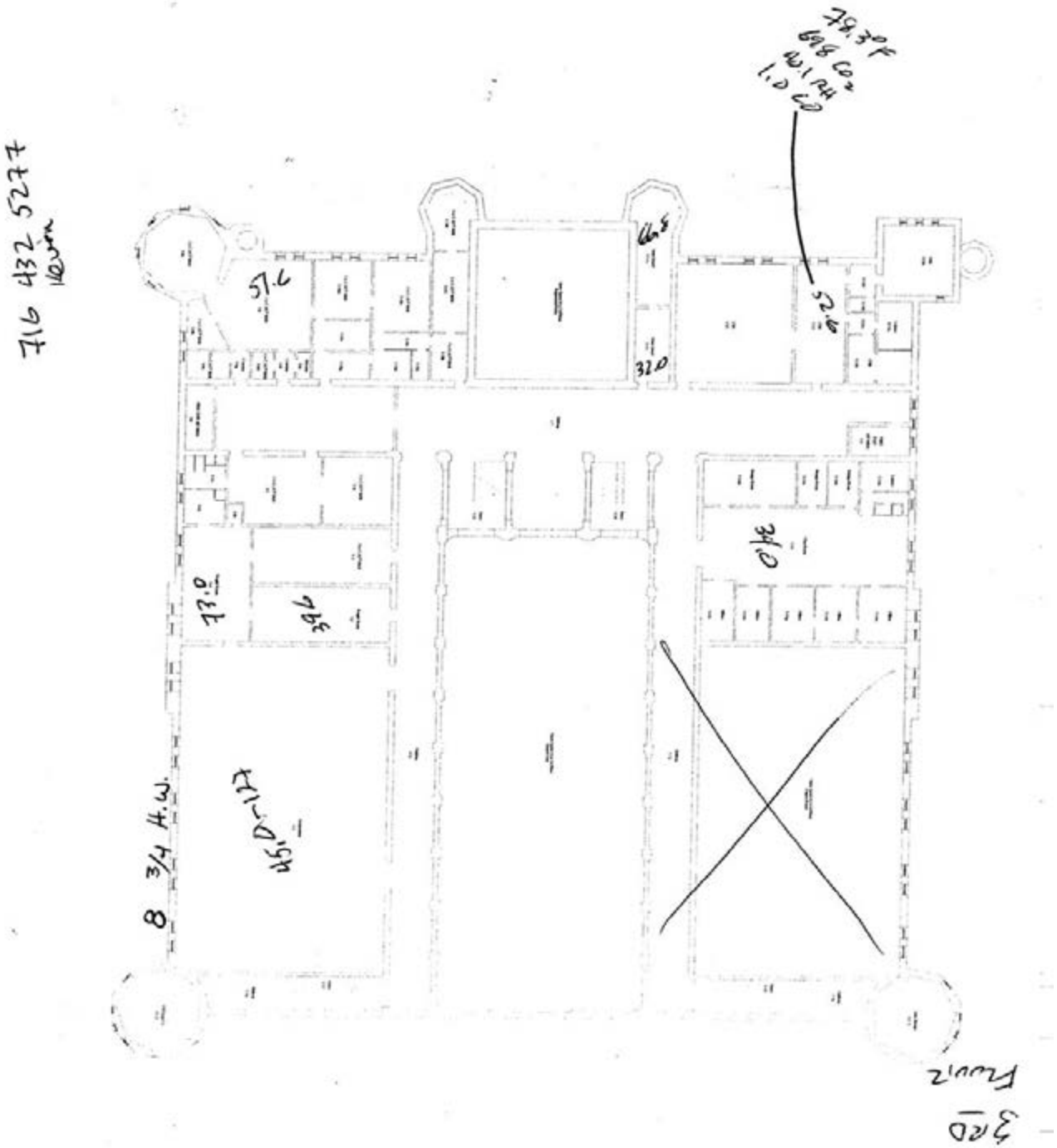
AECOM

2nd Floor





AECOM



Appendix B

Connecticut Street Readiness Center Photographs

AECOM

Photograph 1
 Building Exterior - Front

Photograph 2
 Building Exterior - Rear

AECOM

Photograph 3
 Former Rifle Range
Photograph 4
 Former Rifle Range

AECOM

Photograph 5
 Peeling Paint in Basement Corridor
Photograph 6
 Peeling Paint in Shower Room

AECOM

Photograph 7
 Boiler Room

Photograph 8
 Dining Area

Photograph 9
 Kitchen
Photograph 10
 Locker Room

AECOM

Photograph 11
 Typical Radiant Heater

Photograph 12
 Great Hall

Photograph 13
 Space Adjacent to Assembly Hall
Photograph 14
 Assembly Hall (from 2nd floor)

AECOM

Photograph 13

Assembly Hall (from main level)

Appendix C

Analytical Results

AECOM

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

AIHA LAP, LLC ACCREDITED LABORATORY

CERTIFICATE OF ANALYSIS

Client: National Guard Bureau

Address: 301-BI Old Bay Lane, Attn: ARNG-CIG-P, State Military Reservation
Havre de Grace, Maryland 21078

Attention: [redacted]

Job Name: NY-Connecticut Street RC

Job Location: Buffalo, NY

Job Number: Not Provided

P.O. Number: W912K6-11-F-0070

Chain Of Custody: 313407

Date Submitted: 7/17/2012

Person Submitting: [redacted]

Date Analyzed: 7/24/2012

Report Date: 7/24/2012

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
12077902	NY-CRC-01 A	Flame	Air	114	N/A	26	ug/m³	<3	<26	ug/m³	
12077903	NY-CRC-02 A	Flame	Air	112	N/A	27	ug/m³	<3	<27	ug/m³	
12077904	NY-CRC-01	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
12077905	NY-CRC-02	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
12077906	NY-CRC-03	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
12077907	NY-CRC-04	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
12077908	NY-CRC-05	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
12077909	NY-CRC-06	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
12077910	NY-CRC-07	Flame	Wipe	****	0.111	110	ug/ft²	19	170	ug/ft²	
12077911	NY-CRC-08	Flame	Wipe	****	0.111	110	ug/ft²	26	240	ug/ft²	

An AIHA (#100478) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-3640 · Toll Free (888) 346-0961 · Fax (301) 459-2643

AECOM

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

AIHA LAP, LLC ACCREDITED LABORATORY

CERTIFICATE OF ANALYSIS

Client: National Guard Bureau
Address: 301-81 Old Bay Lane, Attn: ARNG-CKG-P, State Military Reservation
Havre de Grace, Maryland 21078
Attention: [redacted]

Job Name: NY-Connecticut Street RC
Job Location: Buffalo, NY
Job Number: Not Provided
P.O. Number: W912K6-11-F-0070

Chain Of Custody: 513407
Date Submitted: 7/17/2012
Person Submitting: [redacted]
Date Analyzed: 7/24/2012
Report Date: 7/24/2012

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)
%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.
Air and Wipe results are not corrected for any blank results
Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.
All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Analyst: [redacted] Technical Manager: [redacted]

Non-Responsive

An AIHA (#100479) and NY ELAP (#10920) Accredited Laboratory
4475 Forbes Blvd. - Lanham, MD, 20706 - (301) 459-2640 - Toll Free (800) 346-0961 - Fax (301) 459-2643

AECOM

OWI (410) 247-2024 155202 210 REV. 6.08

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) **513407**

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information: NY -
1. Job Name: Connecticut ST RC
2. Job Location: Buffalo, NY
3. Job #: PO #: W912K6-11-F-0070
4. Contact Per[redacted]2-0273
5. Submitted b[redacted]ature[redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS			REPORT TO:
❑ Immediate Date Due: ____ ❑ 24 Hours Time Due: ____ Comments ____	❑ Immediate ❑ Next Day ❑ 2 Day	❑ 3 Day ☒ 5 Day + Date Due: 7/24/12	❑ Results Required By Noon (Every Attempt Will Be Made to Accomodate)	☒ Inclu[redacted]ith Report ☒ Email[redacted]aecom.com ❑ Fax:[redacted]us.army.mil ❑ Verba[redacted]us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 ____ (QTY)
❑ Fiberglass ____ (QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA ____ (QTY)
❑ NIOSH 7402 ____ (QTY)
❑ Other (specify ____) ____ (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate ____ (QTY)
❑ EPA Point Count ____ (QTY)
❑ NY State Friable 198.1 ____ (QTY)
❑ Grav. Reduction ELAP 198.6 ____ (QTY)
❑ Other (specify ____) ____ (QTY)
MISC
❑ Vermiculite
❑ Asbestos Soil PLM __(Qual) PLM __(Quan) PLM/TEM __(Qual) PLM/TEM __(Quan)

TEM Bulk
❑ ELAP 198.4/Chatfield ____ (QTY)
❑ NY State PLM/TEM ____ (QTY)
❑ Residual Ash ____ (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
❑ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
❑ Quan. (s/area) Dust D6480-99 ____ (QTY)
TEM Water
❑ Qual. (pres/abs) ____ (QTY)
❑ ELAP 198.2/EPA 100.2 ____ (QTY)
❑ EPA 100.1 ____ (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples ____ °C)

Metals Analysis
❑ Pb Paint Chip ____ (QTY)
☒ Pb Dust Wipe (wipe type ghost) 8 (QTY)
☒ Pb Air 2 (QTY)
❑ Pb Soil/Solid ____ (QTY)
❑ Pb TCLP ____ (QTY)
❑ Drinking Water ❑ Pb ____ (QTY) ❑ Cu ____ (QTY) ❑ As ____ (QTY)
❑ Waste Water ❑ Pb ____ (QTY) ❑ Cu ____ (QTY) ❑ As ____ (QTY)
❑ Pb Furnace (Media ____) ____ (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ____
Collection Media ____
❑ Spore-Trap ____ (QTY) ❑ Surface Vacuum Dust ____ (QTY)
❑ Surface Swab ____ (QTY) ❑ Culturable ID Genus (Media ____) ____ (QTY)
❑ Surface Tape ____ (QTY) ❑ Culturable ID Species (Media ____) ____ (QTY)
❑ Other (Specify ____) ____ (QTY)

SAMPLE INFORMATION

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER	SOIL	WIPE	TAPE	SWAB
NY-CRC-01A	Drill Hall - N	7/10/12	114	–				X		X							
02A	↓ ↓ - S		112	–				X		X							
01	Drill Hall Floor N		–	16 in²				X				X					
02	S		–					X				X					
03	Drill Hall Sill		–					X				X					
04	KITCHEN		–					X				X					
05	OFFICE		–					X				X					
06	Former Bullet trap		–					X				X					
07	Former Range Floor		–					X				X					
↓ 08	Outside Ground Range	↓	–	↓				X				X					

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 7 / 17 / 12 @ 1415 Via: FEDEX By (Prin[redacted]
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print) ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ____ / ____ / ____ Time: ____ Initials: ____
4. Comments: 7937 5286 0636

Appendix D

References

1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current Ed. http://www.osha.gov/comp-links.html

2. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998. http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

3. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, 15 February 1990. http://www.usapa.army.mil/pdffiles/r11_34.pdf

4. AR 40-5, Medical Service, Preventive Medicine, 25 May 2007. http://www.usapa.army.mil/pdffiles/r40_5.pdf

5. AR 385-10, The Army Safety Program, 23 August 2007. http://www.usapa.army.mil/pdffiles/r385_10.pdf. RAR issue date: 4 Oct 2011.

6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://www.usapa.army.mil/pdffiles/p40_501.pdf

7. DA PAM 40-11, Preventive Medicine, 22 July 2005. http://www.army.mil/usapa/epubs/pdf/p40_11.pdf. RAR issue date: 19 Oct 2009.

8. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000. http://www.usapa.army.mil/pdffiles/p40_503.pdf

9. Unified Facilities Criteria (UFC) 3-410-01FA, Heating, Ventilating, and Air Conditioning, change 4 Jan 2010. http://www.wbdg.org/ccb/DOD/UFC/ufc_3_410_01fa.pdf

10. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current Ed.

11. Industrial Ventilation – A Manual of Recommended Practice for Design, ACGIH, current Ed.

12. American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) Z358.1-2009, Emergency Eyewash and Shower Equipment.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

14. RP-1-2004, Office Lighting, ANSI/IESNA.

15. RP-7-2001, Industrial Lighting, ANSI/IESNA, change 20 July 2004.

16. ANSI/ASHRAE 55-2010 Thermal Conditions for Human Occupancy.

17. National Guard Pamphlet (NG PAM) 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND NY 21010-5403

MCHB-TS-OFS

MAY 1 1 2007

MEMORANDUM FOR National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 301-IH Old Bay Lane, Havre de Grace, MD 21078

SUBJECT: Industrial Hygiene Baseline Surveys, No. 55-ML-048L-05/07, New York Army National Guard Facilities Auburn Armory, Auburn, NY, 13 September 2005

1. Enclosed is the final copy of the subject report and two CD-ROMs.

2. Our point of contact is Mr. Non-Responsive, Industrial Hygiene Field Services Program, commercial (410) 436-4938/3118, DSN 584-4938/3118. Mr. Non-Responsive may also be reached by electronic mail: Non-Responsive @us.army.mil.

FOR THE COMMANDER:

Non-Responsive

Director, Occupational Health Sciences

Encl

CF: (wo/CD-ROMs)
USACHPPM-NORTH (MCHB-AN-IH/MR. Non-Responsive)

Readiness thru Health

Printed on Recycled Paper

U.S. Army Center for Health Promotion and Preventive Medicine

USCHPPM

INDUSTRIAL HYGIENE BASELINE SURVEYS
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
AUBURN ARMORY
13 SEPTEMBER 2005

Distribution limited to U.S. Government agencies only. Requests for this document must be referred to the National Guard Bu[redacted]
Industrial Hygiene Offi[redacted]NE/Ms. Non-Responsive
301-IH Old Bay Lane, Havre de Grace, MD 21078

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

Readiness Thru Health

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U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE BASELINE SURVEY
NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
AUBURN ARMORY
13 SEPTEMBER 2005

1. PURPOSE OF EVALUATION. To conduct an industrial hygiene survey at the New York Army National Guard (NYARNG) Auburn Armory, Auburn, NY, to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

2. CONCLUSIONS.

a. Lead Exposure. Levels of lead in dust that exceeded safe limits for adults and children were identified. These levels may result in health hazards to adults and to children visiting the Armory. Personnel working in the Armory may have been tracking dust containing lead throughout the facility. Cleaning areas with elevated levels of lead in dust may prevent lead from becoming redistributed throughout the Armory. Deteriorated paint found in two rooms was lead-based paint (LBP).

b. Asbestos. Exposure to asbestos in the Armory was not expected to be a concern until major renovations to the existing building were conducted. The building was originally constructed with asbestos-containing building materials (ACBM) used for insulation on the hot water pipes and the boiler system, and in the floor tile. The ACBM was identified on the exterior of the building in the form of corrugated Transite on a shed attached to the building. The Auburn Armory had an Asbestos Management Plan (AMP) as required by Army policy.

3. RECOMMENDATIONS.

a. Lead Exposure. Health Risk Assessment Codes (RAC) 3 for children. Health RAC 4 for adults. Ensure that areas with deteriorated LBP are renovated in accordance with Environmental Protection Agency (EPA) and State of New York regulations. Clean horizontal surfaces in the administrative areas to the National Guard Bureau (NGB) Region North Industrial Hygiene Office and the Center's recommended limits for lead in dust on frequently contacted surfaces. Follow the guidance in Appendix F of the report. Address all potential lead hazards before

continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the Drill Hall and Classroom to the EPA lead in dust standards for young children, and clean other horizontal surfaces in the Drill Hall and Classroom to the NGB Region North Industrial Hygiene Office and this Center's recommended limit. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. Health RAC 3.

(1) Perform an asbestos survey during and after the renovation if potential ACBM additional to the floor tile is identified during the renovation work, including window caulking.

(2) Update and implement the AMP for the facility as appropriate.

(3) If material determined to be ACBM becomes damaged, encapsulate or remove it as soon as possible.

CONTENTS

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
AUBURN ARMORY
AUBURN, NY
13 SEPTEMBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE OF EVALUATION. To conduct an industrial hygiene survey at the New York Army National Guard (NYARNG) Auburn Armory, Auburn, NY, to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Fax, National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 27 July 2005, subject: SAB.

4. BACKGROUND INFORMATION.

a. Armory Mission and Background Information. The Armory mission is to support the 27th Infantry, Brigade Headquarters and Headquarters Company (HHC); 108th Infantry, 1st Brigade Light Infantry Company (CO) C; 227th Military Intelligence CO; and 427th Support Battalion HQ and HHC.

b. Date of Construction. The construction date was 1957. Renovations to the facility were under way at the time of the site visit and were scheduled to be completed by the end of 2006.

c. Armory Use by Children. The point of contact (POC) stated that children occupied the Drill Hall or Classroom occasionally for family support meetings. At the time of the survey, the New York Military Department was not advertising the Auburn Armory as available for rental for activities that include young children.

d. POC. The POC was Mr. Non-Responsive, Armory Regional Manager, 174 South Street, Auburn, NY, Phone: (315) 253-4144 or (315) 438-3304.

5. FACILITY EVALUATION.

a. Sampling. Lead in surface dust and lead in air sampling were conducted to determine the existence of lead hazards based on regulatory guidelines. Laboratory results are shown in Appendix B.

b. Physical Condition of Facilities.

(1) Paint. The date of construction of the facility indicated that the use of paint containing lead was likely. The painted walls were in good condition throughout most of the building. However, some peeling and flaking of paint was observed in Room 1 on the first floor due to moisture. Also, the painted floor surface in the Boiler Room was flaking due to age and high humidity and paint was peeling on the Boiler Room walls due to humidity. Room 1, the Boiler Room, and most other rooms on the south side of the building were scheduled to be renovated and repainted.

(2) Asbestos. Mr. Non-Responsive stated that older pipe insulation was asbestos-containing building material (ACBM) and that it had been abated by contractor hired by the State of New York. The areas abated included the Boiler Room and pipe work in the ceiling areas where ACBM may have been used. The floor tile was also ACBM, but was in very good condition, and did not pose a health risk to building occupants. There was a shelter attached to the south end of the building that was made of asbestos-containing Transite corrugated material. It was in good condition with little sign of wear. All documentation for asbestos activities for Auburn Armory was maintained at the headquarters office in Latham, NY. A copy of the Asbestos Management Plan (AMP) was available at the Auburn Armory for review. Personnel reported that window caulking may have been ACBM. The latter should be considered among other potential asbestos hazards in updating the AMP to cover the major renovations planned.

(3) Mold and Moisture Problems. No mold problems were observed or reported. Moisture damage causing paint deterioration was observed in Room 1 on the first floor. This was caused by condensation on the exterior wall of the room. Room 1 was on the end of the building.

(4) Building Physical Condition. The building was in good condition and had been well maintained. The building had been painted in the last 5 years and it remained in good condition with the exception of Room 1 and the Boiler Room.

(5) Indoor Firing Range (IFR). The IFR was closed in the early 1990's, lead had been abated, and the IFR had been converted to a Storage Room. This room did not contain many items and had been designated only for overflow storage.

c. Safety and Occupational Health Programs. A Lead Hazard Management Plan was provided. The Armory had a comprehensive annual hazard awareness training program in place with a detailed list of topics covered in the training. State employee training records were available and up to date. Employees were instructed on the potential hazards associated with exposure to lead and asbestos, and training requirements as listed in the Occupational Safety and Health Administration (OSHA) Regulation Title 29 Part 1910.

d. Heating, Ventilation, and Air Conditioning Systems. The building was heated by a hot-water boiler. The building was cooled by window air-conditioning units located in various office spaces in the building. The Drill Hall was heated by ceiling mounted heaters.

e. Motor Pool. Operations in the "Temporary Motor Pool" attached to the building may at times have produced noise levels in excess of 85 decibels A-weighted (dBA) but it was not likely that these levels would last for an eight-hour period. No sound level readings were taken during the survey. Interviews with Soldiers working in the motor pool revealed that work was confined to minor maintenance operations on a limited basis. This included changing oil, tire repair, muffler replacement, and battery and brake pad replacement. Exhaust exposures were controlled by opening the overhead doors and keeping the rear of the vehicles outside the door opening. All major vehicle repairs were conducted at other locations such as at Syracuse, NY. The vehicle maintenance operations were to be moved to the new Motor Pool once it was completed in late fall of 2006.

f. Lighting. There were no occupant complaints concerning lighting. The light levels in the office space in Room 43, second floor and Classroom 10, first floor, were 81 and 79 foot-candles respectively. These values fall within the range for medium visual tasks such as office work and reading. The POC stated that the facility had received an upgrade in lighting fixtures throughout the building.

g. Indoor Air Quality (IAQ). Temperature in degrees Fahrenheit (° F), relative humidity (RH) in percent, carbon dioxide (CO_2) levels in parts per million (ppm), and carbon monoxide (CO) levels in ppm were measured to assess building IAQ. Individual measurements were not available for this report. However, the interior temperature averaged 73° F, RH averaged 46 percent, CO_2 levels averaged 510 ppm, and CO levels were less than 0.1 ppm. The American Society of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE) recommends maintaining temperatures of 71 to 81º F in the summer, CO_2 levels below the value of 700 ppm plus the outdoor ambient level (approximately 380 ppm), and 30-60 percent RH. All measured values were within ASHRAE recommendations.

h. Other Building Concerns. The Motor Pool had personal protective equipment available for the mechanics working in the shop. Equipment included safety eye protection, gloves, hearing protection, and welding goggles. No additional concerns were reported.

6. ASSESSMENT CRITERIA FOR LEAD.

a. Lead in Air. The Army complies with the OSHA 8-hour time-weighted average Permissible Exposure Limit of 50 micrograms of lead per cubic meter ($\mu g/m^3$) of air.

b. Lead in Dust. The Environmental Protection Agency (EPA) and State of New York limits for lead in dust are 40 micrograms per square foot (µg/ft^2) on floors, 250 µg/ft^2 on windowsills, and 400 µg/ft^2 in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The National Guard Bureau (NGB) Region North Industrial Hygiene Office concurs with the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level of 200 µg/ft^2 on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA/State standards. This limit was adopted from OSHA guidance in Compliance Letter 02-02-58. Further details are in Appendix B.

c. Lead in Paint. Paint containing lead levels of 0.5 percent or more by weight in dried solid (also reported as 5,000 milligrams per kilogram) is considered to be lead-based paint (LBP) according to both Federal and New York State Regulations. Paint containing lead levels of more than 0.7 milligrams per square centimeter is considered to be LBP according to New York State Regulations.

7. SAMPLING RESULTS, DISCUSSION AND CONCLUSIONS.

a. Lead in Dust. Lead in dust sample locations and analytical results are shown in the Table on the next page. Sample results greater than 40 µg/ft² for floors or 200 µg/ft² for frequently contacted surfaces are highlighted. Lead in dust results exceeded the EPA and State of New York limits for young children. Ten lead in dust results exceeded the NGB Region North Industrial Hygiene Office and USACHPPM recommended levels for lead in dust on frequently contacted surfaces. There were very high levels of lead dust inside and adjacent to the Storage Room (former IFR), Boiler Room, and Rooms 1, 40, and 43. Personnel working in these rooms were potentially exposed to lead, and may have been tracking lead out of the area and redistributing it into adjacent rooms in the Armory. This could result in lead exposures for the general workforce and for children visiting this facility. Twenty-nine lead in dust sample results exceeded the EPA and the State of New York lead exposure standard for children of 40 µg/ft² on floors and 250 µg/ft² on windowsills. These levels are hazardous to children exposed to lead dust through physical contact, inhalation, or ingestion of lead dust while visiting the Armory.

TABLE. Lead in Surface Dust Locations and Analytical Results.

Wipe Sample Number	Location of Samples	Result (µg/ft²)
ABW01	Storage Room (converted IFR) floor at exit door	970
ABW02	Storage Room (converted IFR) on 3rd row of lights	1,200
ABW03	Storage Room (converted IFR) exhaust grille	7,500
ABW04	Storage Room (converted IFR) floor at bullet trap location	39,000
ABW05	Storage Room (converted IFR) on overhead piping	4,500
ABW06	Hallway floor outside Storage Room (converted IFR) at door	770
ABW07	Floor at door, base of stairs outside Storage Room (converted IFR)	1,100
ABW08	Boiler Room floor at entrance	5,200
ABW09	Storage Room floor at entrance	1,200
ABW11	Drill Hall floor at entrance	64
ABW12	Drill Hall, top of cabinet	430
ABW13	Drill Hall floor at entrance to Mess Hall	34
ABW14	Drill Hall floor in corner at overhead door	260
ABW15	Drill Hall floor at rear exit	79
ABW17	Room 1 windowsill	1,200
ABW18	Landing floor between 1st and 2nd floors, upstairs from converted IFR	120
ABW19	Room 3 windowsill	140
ABW21	Drill Hall on fire ax box	760
ABW22	Storage Room 15 floor	450
ABW23	Room 15A-16A floor under radiator and window	140
ABW24	Room 15A-16A windowsill	670
ABW25	Room 15A-16A, top of cabinet	82
ABW26	2nd Floor landing floor	930
ABW27	1st Floor hallway, floor at north end	24
ABW28	Room 43, top of locker	140
ABW30	Room 43 windowsill	550
ABW31	2nd Floor Hallway windowsill	28
ABW32	Room 40 floor in corner below window	26,000
ABW33	Room 40 windowsill at south end	390
ABW34	Room 40 floor at north wall behind door	160
ABW36	1st Floor Hallway, top of office locator by front entrance	250
ABW37	North stairway floor, landing between 1st and 2nd Floor	83
ABW38	Kitchen walkthrough floor at entry from Drill Hall	35
ABW39	Dining Hall floor	20

Note: Samples ABW-10, -16, -20, -29, and -35 were field blanks.

NYARNG, IH Survey, Auburn Armory, Auburn, NY, Report No. 55-ML-048l-05/07, 13 September 2005

b. Lead in Air. General area lead in air sampling was conducted in the Storage Room (converted IFR), Drill Hall and 2nd floor office, Room 40. Room 40 was occupied by three to four people, and the occupancy level in the Drill Hall could be 80 or more during Brigade or Soldier family events. The air sample results were all less than 4 µg/m³, and were below the laboratory analytical reporting limit for lead results in air of 1 µg/sample, as well as the OSHA 8-hour time-weighted average Permissible Exposure Limit of 50 µg/m³ for lead in air over an 8-hour day.

c. Lead in Paint. Bulk sampling for lead in deteriorated paint was conducted on the wall of Room 1 and the window frame and pipe work in Room 10. The samples appeared to be representative of the type of paint used throughout the office areas on the first and second floor and in the hallways and stairways. The paint was identified to be LBP, with 1.1 percent lead in the paint around the window frames and 24 percent on the paint on piping in area 10A of Room 10.

d. Asbestos. There were no signs observed of asbestos hazards inside the Armory during this walkthrough. Floor tiles, which were ACBM, were in excellent condition. No friable ACBM was observed in the Boiler Room or other areas of the facility. All ACBM had been removed from the Boiler Room and new pipe insulation and outer covering had been installed. The areas above the drywall ceiling where possible ACBM insulation may have been used were not inspected.

e. Planned Renovation. The Auburn facility was undergoing renovations and the construction of new additions to the building, as well as the construction of a new Motor Pool. Ground breaking for the new additions had begun at the time of the site visit with plans to have the renovation and new additions completed by late 2006. The plans called for major structural changes to the front and sides of the building for both floors. The work was to significantly impact the existing building materials and would require the facility to manage any existing lead paint or ACBM that remained. The addition and new construction would require the Armory to be reassessed for lead and ACBM contamination.

8. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from one to five, with one being the highest priority.

a. Lead Exposure. Health RAC 3 for children. Health RAC 4 for adults. Ensure that areas with deteriorated LBP are renovated in accordance with EPA and State of New York regulations. Clean horizontal surfaces in the administrative areas to the NGB Region North Industrial

NYARNG, IH Survey, Auburn Armory, Auburn, NY, Report No. 55-ML-0481-05/07, 13 September 2005

Hygiene Office and USACHPPM recommended limits for lead in dust on frequently contacted surfaces. Follow the guidance in Appendix F. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the Drill Hall and Classroom to the EPA lead in dust standards for young children, and clean other horizontal surfaces in the Drill Hall and Classroom to the NGB Region North Industrial Hygiene Office and USACHPPM recommended limits. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. Health RAC 3.

(1) Perform an asbestos survey during and after the renovation if potential ACBM additional to the floor tile is identified during the renovation work, including window caulking.

(2) Update and implement the AMP for the facility as appropriate.

(3) If material determined to be ACBM becomes damaged, encapsulate or remove it as soon as possible.

9. PHOTOGRAPHS AND FLOOR PLAN. See Appendices D and E respectively.

10. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report, please contact the undersigned at DSN 584-3118, commercial 410-436-3118, or e-mail: Non-Responsive@us.army.mil.

Non-Responsive

Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive

Program Manager
Industrial Hygiene Field Services Program

APPENDIX A

REFERENCES

Literature Cited

1. Occupational Safety and Health Administration (OSHA), Title 29 Code of Federal Regulations (CFR) Part 1910, current ed.
http://www.osha.gov/comp-links.html

2. U.S. Environmental Protection Agency (EPA), 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart M, National Emission Standard for Asbestos.

3. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62.1-2004, Ventilation for Acceptable Indoor Air Quality.
http://www.ashrae.org

4. DA PAM 40-501, Medical Services, Hearing Conservation Program, 10 December 1998.
http://www.usapaarmy.mil/pdffiles/p40-501.pdf

5. Illuminating Engineering Society of North America, ANSI/IESNA RP-1-2004, Office Lighting.

6. EPA, 40 CFR Part 745, Lead; Identification of Dangerous Levels of Lead; Final Rule, 5 Jan 2001.

7. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, 19 August 1998.
http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

8. OSHA, CPL 02-02-58, 29 CFR 1926.62, Lead Exposure In Construction; Interim Final Rule--Inspection and Compliance Procedures, December 13, 1993.

APPENDIX B

LABORATORY REPORTS

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLA 101143-0
NY ELA 10920
AIHA 100470

Client:	National Guard Bureau	**Job Name:**	Not Provided	**Chain Of Custody:**	116951		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Auburn, NY	**Date Submitted:**	9/23/2005		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	9/28/2005	**Report Date:**	05-Oct-05
Attention:	Non-Responsive						

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0567317	AB-B-01	Flame	Paint Chip	****	N/A	0.01	%Pb	0.094	%Pb	
0567318	AB-B-02	Flame	Paint Chip	****	N/A	0.01	%Pb	0.15	%Pb	
0567319	AB-B-03	Flame	Paint Chip	****	N/A	0.01	%Pb	1.1	%Pb	
0567320	AB-B-04	Flame	Paint Chip	****	N/A	0.01	%Pb	24	%Pb	
0567321	AB-A-01	Flame	Air	893	N/A	3.36	ug/m³	< 3.4	ug/m³	
0567322	AB-A-02	Flame	Air	860	N/A	3.49	ug/m³	< 3.5	ug/m³	
0567323	AB-A-03	Flame	Air	798	N/A	3.76	ug/m³	< 3.8	ug/m³	
0567324	AB-A-04	Flame	Air	797	N/A	3.76	ug/m³	< 3.8	ug/m³	
0567325	AB-A-05	Flame	Air Blank	0	N/A	3.00	ug/m³	< 3	ug	
0567326	AB-W-00	Furnace	Wipe Blank	****	N/A	0.30	ug	0.38	ug	
0567327	AB-W-01	Flame	Wipe	****	0.111	108.01	ug/ft²	970	ug/ft²	
0567328	AB-W-02	Flame	Wipe	****	0.111	108.01	ug/ft²	1200	ug/ft²	
0567329	AB-W-03	Flame	Wipe	****	0.111	108.01	ug/ft²	7500	ug/ft²	
0567330	AB-W-04	Flame	Wipe	****	0.111	108.01	ug/ft²	39000	ug/ft²	
0567331	AB-W-05	Flame	Wipe	****	0.111	108.01	ug/ft²	4500	ug/ft²	
0567332	AB-W-06	Flame	Wipe	****	0.111	108.01	ug/ft²	770	ug/ft²	
0567333	AB-W-07	Flame	Wipe	****	0.111	108.01	ug/ft²	1100	ug/ft²	
0567334	AB-W-08	Flame	Wipe	****	0.111	108.01	ug/ft²	5200	ug/ft²	
0567335	AB-W-09	Flame	Wipe	****	0.111	108.01	ug/ft²	1200	ug/ft²	
0567336	AB-W-10	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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A Specialized Environmental Laboratory

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NVLAP 101143-0
NY ELAP 10920
AIHA 100470

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Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Auburn, NY	**Date Submitted:**	9/23/2005		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	9/28/2005	**Report Date:**	05-Oct-05
Attention:	Non-Responsive						

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0567337	AB-W-11	Furnace	Wipe	****	0.111	13.50	ug/ft²	64	ug/ft²	
0567338	AB-W-12	Furnace	Wipe	****	0.111	67.51	ug/ft²	430	ug/ft²	
0567339	AB-W-13	Furnace	Wipe	****	0.111	13.50	ug/ft²	34	ug/ft²	
0567340	AB-W-14	Furnace	Wipe	****	0.111	67.51	ug/ft²	260	ug/ft²	
0567341	AB-W-15	Furnace	Wipe	****	0.111	67.51	ug/ft²	79	ug/ft²	
0567342	AB-W-16	Furnace	Wipe Blank	****	N/A	0.30	ug	0.37	ug	
0567343	AB-W-17	Flame	Wipe	****	0.111	108.01	ug/ft²	1200	ug/ft²	
0567344	AB-W-18	Furnace	Wipe	****	0.111	67.51	ug/ft²	120	ug/ft²	
0567345	AB-W-19	Furnace	Wipe	****	0.111	67.51	ug/ft²	140	ug/ft²	
0567346	AB-W-20	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0567347	AB-W-21	Flame	Wipe	****	0.111	108.01	ug/ft²	760	ug/ft²	
0567348	AB-W-22	Furnace	Wipe	****	0.111	67.51	ug/ft²	450	ug/ft²	
0567349	AB-W-23	Furnace	Wipe	****	0.111	67.51	ug/ft²	140	ug/ft²	
0567350	AB-W-24	Furnace	Wipe	****	0.111	67.51	ug/ft²	670	ug/ft²	
0567351	AB-W-25	Furnace	Wipe	****	0.111	67.51	ug/ft²	82	ug/ft²	
0567352	AB-W-26	Flame	Wipe	****	0.111	108.01	ug/ft²	930	ug/ft²	
0567353	AB-W-27	Furnace	Wipe	****	0.111	2.70	ug/ft²	24	ug/ft²	
0567354	AB-W-28	Furnace	Wipe	****	0.111	67.51	ug/ft²	140	ug/ft²	
0567355	AB-W-29	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0567356	AB-W-30	Furnace	Wipe	****	0.111	67.51	ug/ft²	550	ug/ft²	

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A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0
NY ELAP 10920
AIHA 100470

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Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Auburn, NY	**Date Submitted:**	9/23/2005
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	Not Provided	**Date Analyzed:**	9/28/2005
Attention:	Non-Responsive			**Report Date:**	05-Oct-05

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0567357	AB-W-31	Furnace	Wipe	****	0.111	13.50	ug/ft²	28	ug/ft²	
0567358	AB-W-32	Flame	Wipe	****	0.111	108.01	ug/ft²	26000	ug/ft²	
0567359	AB-W-33	Furnace	Wipe	****	0.111	67.51	ug/ft²	390	ug/ft²	
0567360	AB-W-34	Furnace	Wipe	****	0.111	67.51	ug/ft²	160	ug/ft²	
0567361	AB-W-35	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0567362	AB-W-36	Furnace	Wipe	****	0.111	67.51	ug/ft²	250	ug/ft²	
0567363	AB-W-37	Furnace	Wipe	****	0.111	67.51	ug/ft²	83	ug/ft²	
0567364	AB-W-38	Furnace	Wipe	****	0.111	13.50	ug/ft²	35	ug/ft²	
0567365	AB-W-39	Furnace	Wipe	****	0.111	2.70	ug/ft²	20	ug/ft²	
0567366	AB-W-40	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Analy Non-Responsive

Technical Manager: Non-Responsive

APPENDIX C

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If Soldiers clean weapons in the facility, change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. General area air samples collected in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions, there is currently no overexposure to personnel from lead dust in this building.

APPENDIX D

PHOTOGRAPHS

Drill Hall looking towards the north wall

Temporary Motor Pool.

Floor of Boiler Room. Floor surface flaking due to water damage and age.

Boiler Room. Paint peeling due to age and high humidity.

Room 1, first floor, south wall and front window. Deteriorated paint was sampled for lead.

ABW01. Indoor Firing Range (IFR) door area.

ABW03. Old exhaust vent chase in the IFR.

ABW04. Converted IFR in bullet trap area.

ABW02 and ABW05. The sampled light fixture
and overhead pipe work remaining in the converted IFR.

ABW07. Stairway landing at basement level.

ABW06. Outside IFR door area in basement between IFR and stairway.

ABW08. Boiler Room near doorway.

ABW09. Doorway of Storage Room 45.

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ABW10. Top step of stairway to basement, east side of building.

ABW11. Drill Hall at south entrance.

ABW12. Sample collected from top of second cabinet from left.

ABW13. Drill Hall behind door to Kitchen on north wall.

ABW14. East wall of Drill Hall near overhead doors and storage area for maintenance equipment.

ABW15. Drill Hall exit door on east wall at north corner.

ABW17. Windowsill of Room 1, first floor, south end of building facing east.

ABW18. Stairway landing between first and second floors, east side of building.

ABW19. Room 3 below window on south side.

ABW21. Drill Hall, north wall.
Sample collected from top of fire ax case.

ABW22. Storage Room 15, south wall.

ABW23. Rooms 15A-16A, south wall under window.

ABW24. Rooms 15A-16A, windowsill on south wall.

ABW25. Rooms 15A-16A, south wall.
Sample collected from top of cabinet.

ABW27. Hallway, north side of building at exit stairway.

ABW28. Room 43, second floor, north end of building.
Sample taken from top of cabinet.

ABW30. Room 43, windowsill on south wall.

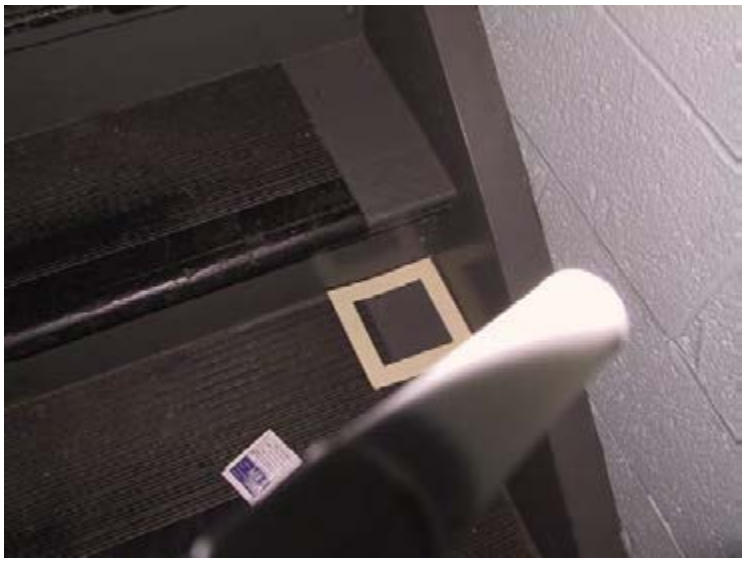
ABW31. North side hallway window sill.

ABW32. Room 40, second floor,
south wall below window.

ABW33. Room 40, windowsill on south wall.

ABW34. Room 40, second floor, door to hallway.

ABW38. Kitchen walkthrough from Drill Hall
to Dining Room.



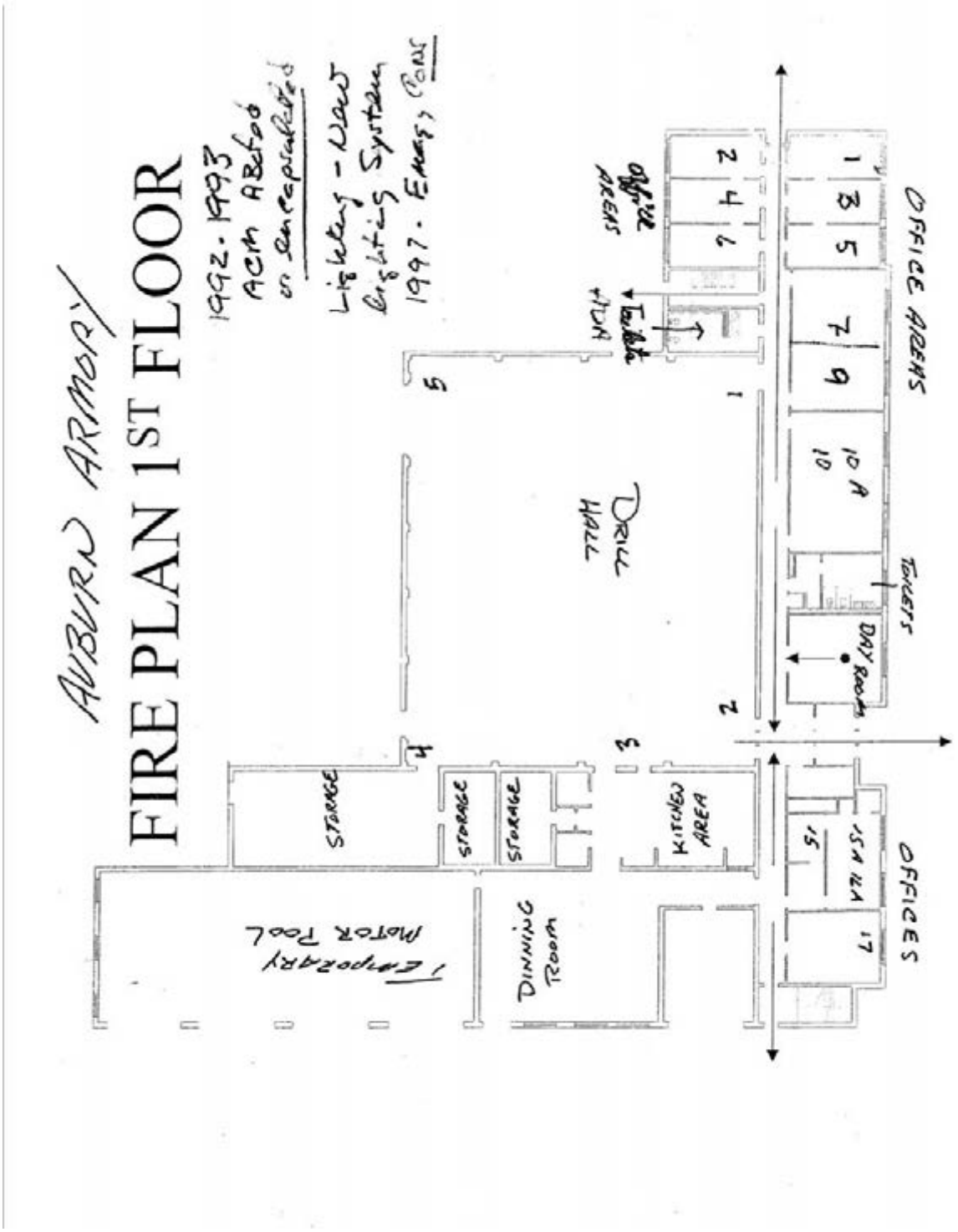
ABW37. Stairway at north end of building,
between first and second floor.

ABW39. Dining Hall.

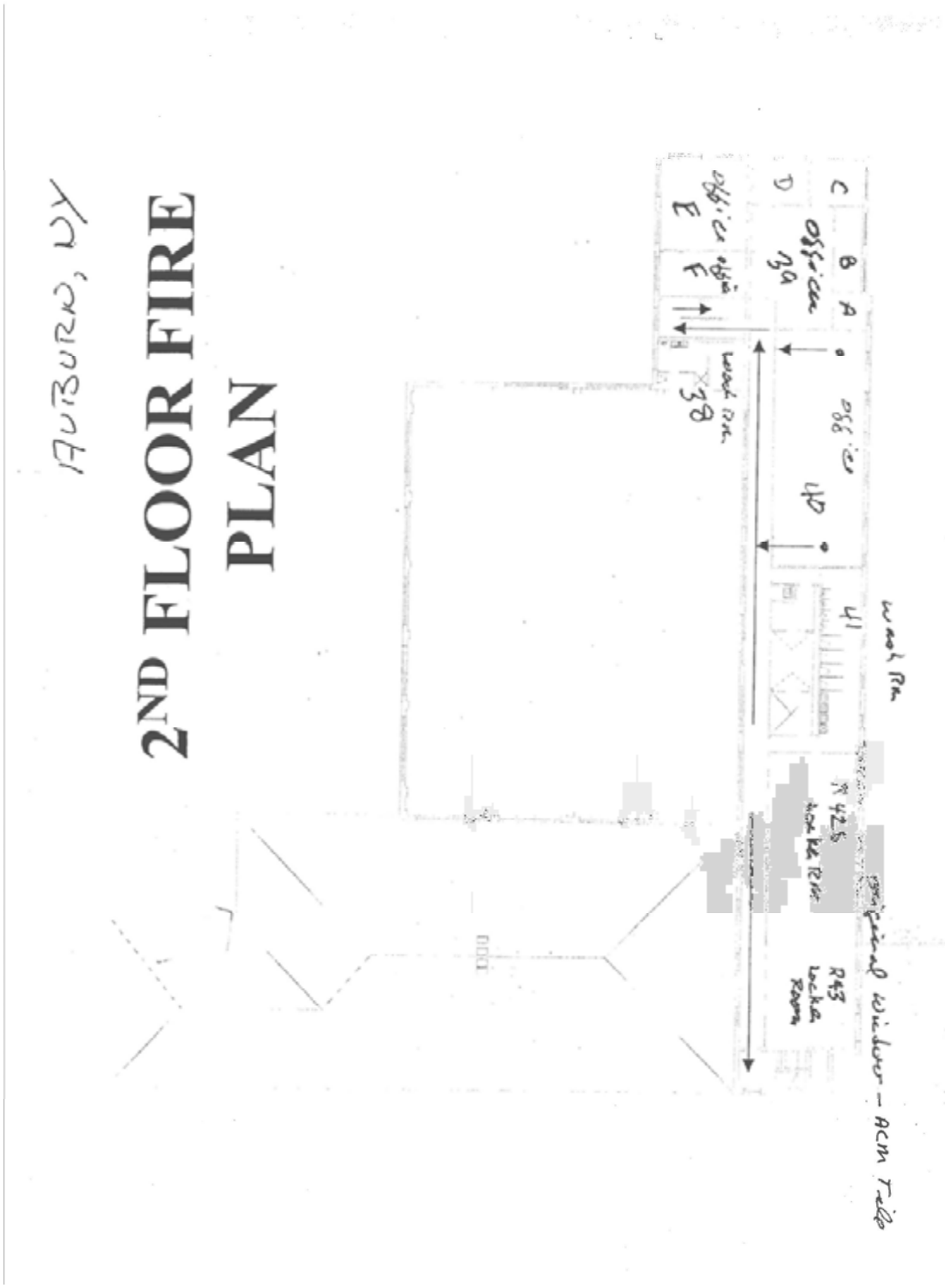
APPENDIX E

FLOOR PLANS

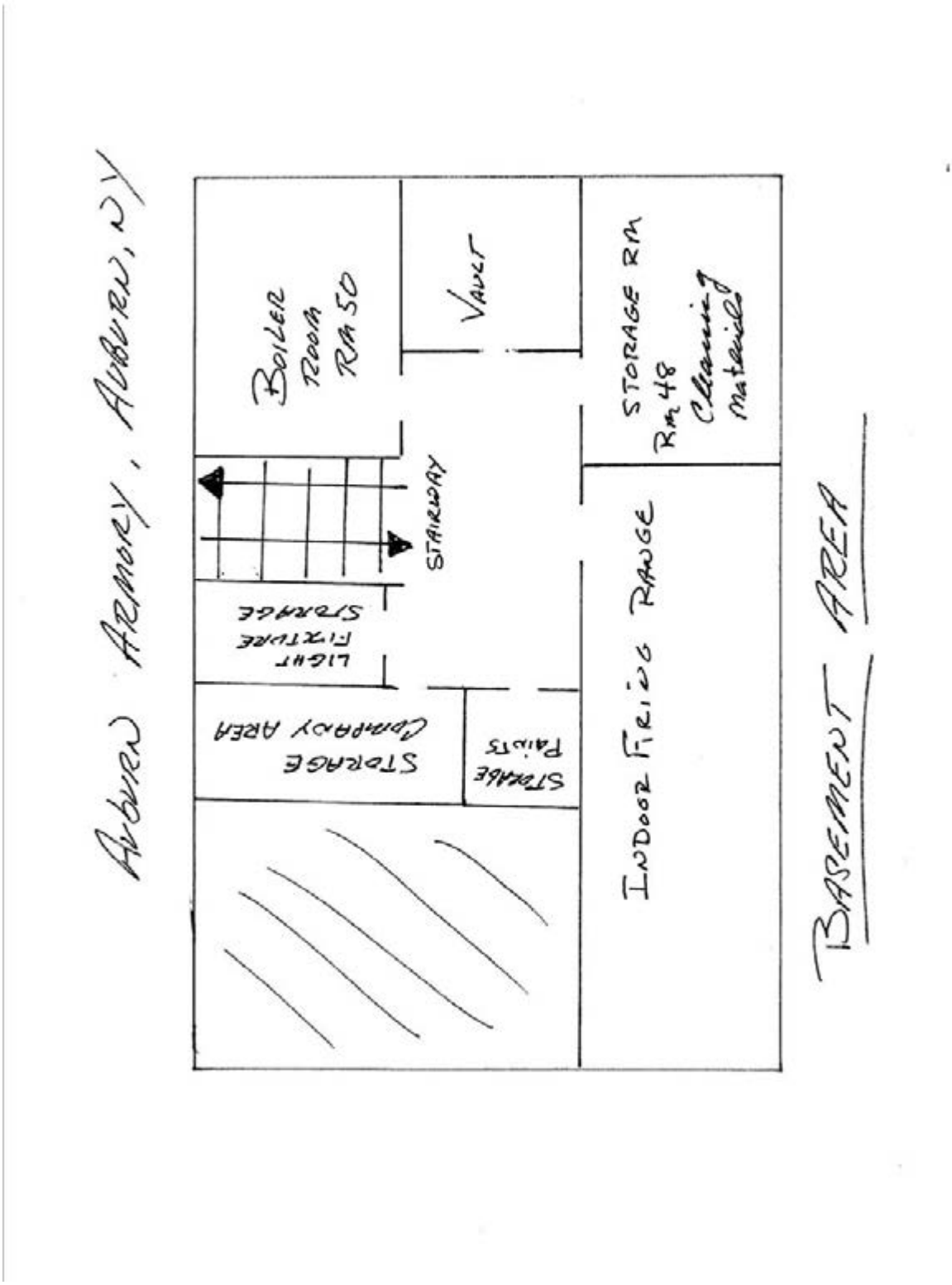
FIRST FLOOR



Second Floor



Basement Floor



APPENDIX F

LEAD CLEANING GUIDANCE

CHAPTER 14: CLEANING

Cleaning: How To Do It

1. Include step-by-step procedures for precleaning, cleaning during the job, and daily and final cleanings in project design or specifications.
2. Assign responsibilities to specific workers for cleaning and for maintaining cleaning equipment.
3. Have sufficient cleaning equipment and supplies *before* beginning work.
4. If contamination is extensive, conduct precleaning of the dwelling unit. Move or cover all furniture and other objects.
5. Conduct ongoing cleaning during the job, including regular removal of large and small debris and dust. Decontamination of all tools, equipment, and worker protection gear is required before it leaves containment areas. Electrical equipment should be wiped and high-efficiency particulate air (HEPA) vacuumed, not wetted down, to minimize electrocution hazards.
6. Schedule sufficient time (usually 30 minutes to an hour) for a complete daily cleaning, starting at the same time near the end of each workday after lead hazard control activity has ceased.
7. For final cleaning, wait at least 1 hour after active lead hazard control activity has ceased to let dust particles settle.
8. Use a vacuum cleaner equipped with a HEPA exhaust filter. HEPA vacuum all surfaces in the room (ceilings, walls, trim, and floors). Start with the ceiling and work down, moving toward the entry door. Completely clean each room before moving on.
9. Wash all surfaces with a lead-specific detergent, high-phosphate detergent, or other suitable cleaning agent to dislodge any ground-in contamination, then rinse. Change the cleaning solution after every room is cleaned.
10. Repeat step 8. To meet clearance standards consistently, a HEPA vacuum, wet wash, and HEPA vacuum cycle is recommended. For interim control projects involving dust removal only, the final HEPA vacuuming step is usually not needed (see Chapter 11). Other cleaning methods are acceptable, as long as clearance criteria are met and workers are not overexposed.
11. After final cleaning, perform a visual examination to ensure that all surfaces requiring lead hazard control have been addressed and all visible dust and debris have been removed. Record findings and correct any incomplete work. This visual examination should be performed by the owner or an owner's representative who is independent of the lead hazard control contractor.
12. If other construction work will disturb the lead-based paint surfaces, it should be completed at this point. If those surfaces are disturbed, repeat the final cleaning step after the other construction work has been completed.
13. Paint or otherwise seal treated surfaces and interior floors.
14. Conduct a clearance examination (see Chapter 15).
15. If clearance is not achieved, repeat the final cleaning.

16. Continue clearance testing and repeated cleaning until the dwelling achieves compliance with all clearance standards. As an incentive to conduct ongoing cleaning and a thorough final cleaning, the cost of repeated cleaning after failing to achieve clearance should be borne by the contractor as a matter of the job specification, not the owner.
17. Do not allow residents to enter the work area until cleaning is completed and clearance is established.
18. Cleaning equipment list:
    - HEPA vacuums.
    - Detergent.
    - Waterproof gloves.
    - Rags.
    - Sponges.
    - Mops.
    - Buckets.
    - HEPA vacuum attachments (crevice tools, beater bar for cleaning rugs).
    - 6-mil plastic bags.
    - Debris containers.
    - Waste water containers.
    - Shovels.
    - Rakes.
    - Water-misting sprayers.
    - 6-mil polyethylene sheeting (or equivalent).

Chapter 14: Cleaning

I. Introduction

This chapter describes cleaning procedures to be employed following abatement and interim control work. Dust removal as an interim control measure is covered in Chapter 11.

All lead hazard control activities can produce dangerous quantities of leaded dust. Unless this dust is properly removed, a dwelling unit will be more hazardous after the work is completed than it was originally. Once deposited, leaded dust is difficult to clean effectively. Whenever possible, ongoing and daily cleaning of leaded dust during lead hazard control projects is recommended. Ongoing and daily cleaning is also necessary to minimize worker exposures.

Cleaning is the process of removing visible debris *and* dust particles too small to be seen by the naked eye. Removal of lead-based paint hazards in a dwelling unit will not make the unit safe unless excessive levels of leaded dust are also removed. This is true regardless of whether the dust was present before or generated by the lead hazard control process itself. Improper cleaning can increase the cost of a project considerably because additional cleaning and clearance sampling will be necessary. However, cleaning and clearance can be achieved routinely if care and diligence are exercised.

A. Performance Standard

Although the cleaning methods described in this chapter are feasible and have been shown to be effective in meeting clearance standards, other methods may also be used if they are safe and effective. This performance-oriented approach should stimulate innovation, reduce cost, and ensure safe conditions for both residents and workers.

B. Small Dust Particles

Dust particles that are invisible to the naked eye remain on surfaces after ordinary cleaning procedures. A visibly clean surface may contain high and unacceptable levels of dust particles and require special cleaning procedures.

C. Difficulties in Cleaning

While cleaning is an integral and essential component of any lead hazard control activity, it is also the most likely part of the activity to fail.

Several common reasons for this failure include low clearance standards, worker inexperience, high dust-producing methods, and deadlines.

1. Low Clearance Standards

Because very small particles of leaded dust are easily absorbed by the body when ingested or inhaled, a small amount can create a health hazard for young children. Therefore, "clearance standards" are extremely low for acceptable levels of leaded dust particles on surfaces after hazard control activities, and careful cleaning procedures are required. Although it is not possible to remove *all* leaded dust from a dwelling, it is possible to reduce it to a safe level.

Clearance standards are described more fully in Chapter 15. The permissible amount of leaded dust remaining on each of the following surfaces following lead hazard work is as follows:

- 100 µg/ft² on floors.
- 500 µg/ft² on interior window sills (stools).
- 800 µg/ft² on window troughs (the area where the sash sits when closed).
- 800 µg/ft² on exterior concrete.

These levels are based on wipe sampling. Clearance testing determines whether the premises or area are clean enough to be reoccupied after the completion of a lead paint hazard control project. A cleaned area may not be reoccupied until compliance with clearance standards has been established. To prevent delays, final testing and final cleaning activities should be coordinated.

2. Worker Inexperience

To understand the level of cleanliness required to meet the established clearance standards for hazard control cleanup, new hazard control personnel often require a significant reorientation to cleaning. Many construction workers are used to cleaning up only dust that they can see, not the invisible dust particles that are also important to remove.

3. High Dust-Producing Methods and/or Inadequate Containment

High dust-generating methods, inadequate containment during hazard control work, and poor work practices can all make achievement of clearance particularly difficult. Work practices necessary to prevent spreading of dust throughout a dwelling (e.g., by tracking dust out of work areas) are essential but sometimes tedious. Essential work practices are sometimes mistakenly considered to be "flexible guidelines" rather than necessary standards that are designed to ensure that the job is completed, not only safely, but also on time and within budget.

4. Deadlines

Daily and final cleanings have sometimes been compromised due to project deadlines, since cleaning comes at the end of the job. Hurried efforts often result in clearance failure. Delayed and over-budget hazard control projects are often the result of repeated, unplanned recleanings that are necessitated by inadequate containment and sloppy work practices.

II. Coordination of Cleaning Activities

A. Checklist

The owner or contractor may use the following cleaning checklist before any lead hazard control activity:

- ✓ Is the critical importance of cleaning in a hazard control project understood?
- ✓ Have all workers been trained and certified for hazard control work?
- ✓ Have the precleaning, daily, and final cleanings been scheduled properly and coordinated with the other participants in the hazard control process?
- ✓ Have cleaning equipment and materials been obtained?
- ✓ Do the workers know how to operate and maintain special cleaning equipment, and do they have directions for the proper use of all cleaning materials?
- ✓ Have all workers carefully studied the step-by-step procedures for precleaning (if needed), in-progress cleaning, and daily and final cleanings?
- ✓ Are all workers properly protected during the cleaning processes (see Chapter9)?
- ✓ Have provisions been made to properly contain and store potentially hazardous debris (see Chapter 10)?
- ✓ Have dust-clearance testing and related visual inspections been arranged (see Chapter 15)?
- ✓ Are the clearance criteria to be met fully understood?
- ✓ Have all appropriate surfaces been properly painted or otherwise sealed?
- ✓ Have appropriate records been maintained that document participants' roles in the hazard control project?

B. Equipment Needed for Cleaning

The following equipment is needed to conduct cleaning: high-efficiency particulate air (HEPA) vacuums and attachments (crevice tools, beater bar for cleaning rugs), detergent, waterproof gloves, rags, sponges, mops, buckets, 6-mil plastic bags, debris containers, waste water containers, shovels, rakes, water-misting sprayers, and 6-mil polyethylene plastic sheeting (or equivalent).

C. Waste Disposal

Regulations governing hazardous and nonhazardous waste storage, transportation, and disposal affect both the daily and final cleaning procedures. The hazard control contractor and the disposal contractor should work together to establish formal written procedures, specifying selected containers, storage areas, and debris pickups, to ensure that all relevant regulations are met.

III. Cleaning Methods and Procedures

Many of the special cleaning methods and procedures detailed in this chapter are not standard operating procedure for general home improvement contractors. Therefore, project designers, responsible agencies, or owners must ensure that contractors follow the methods and procedures recommended herein or specially designed alternative procedures, even though some may appear to be redundant and unnecessary. These methods have been shown to be feasible and effective in many situations and skipping steps in the cleaning procedures can be counterproductive.

A. Containment

Because of the difficulty involved in the removal of fine dust, dust generated by hazard control work should be contained to the extent possible to the inside of work areas. Inadequately constructed or maintained containment or poor work practices will result in additional cleaning efforts, due to dust that has leaked out or been tracked out of the work area (see Chapter 8).

B. Basic Cleaning Methods: Wet Wash and Vacuum Cleaning Techniques

Because leaded dust adheres tenaciously, especially to such rough or porous materials as weathered or worn wood surfaces and masonry surfaces (particularly concrete), workers should be trained in cleaning methods. As a motivator, some contractors have awarded bonuses to workers who pass clearance the first time.

Two basic cleaning methods have proven effective, when used concurrently, in lead-based paint hazard control projects: a special vacuum cleaner equipped with a HEPA exhaust filter, followed by wet washing with special cleaning agents and rinsing, followed by a final pass with the HEPA vacuum.

Although HEPA filtered vacuums and trisodium phosphate (TSP) cleaners have been considered the standard cleaning tools for lead hazard control projects, new research, discussed under the "Alternatives Methods" section in this chapter, suggests that other tools and products may also be effective in efficiently cleaning dust while providing adequate worker protection from airborne exposure risks. Some of these innovations may even be superior.

1. HEPA Vacuuming

HEPA vacuums differ from conventional vacuums in that they contain high-efficiency filters that are capable of trapping extremely small, micron-sized particles. These filters can remove particles of 0.3 microns or greater from air at 99.97 percent efficiency or greater. (A micron is 1 millionth of a meter, or about 0.00004 inches.) Some vacuums are equipped with an ultra-low penetration air (ULPA) filter that is capable of filtering out particles of 0.13 microns or greater at 99.9995 percent efficiency. However, these ULPA filters are slightly more expensive, and may be less available than HEPA filters.

Vacuuming with conventional vacuum machines is unlikely to be effective, because much of the fine dust will be exhausted back into the environment where it can settle on surfaces. A recent Canadian study revealed that fine-dust air levels were exceedingly high when a standard portable vacuum with a new bag was used, although partially filled bags were found to be more efficient (CMHC, 1992). Considerations for the proper use of a HEPA vacuum are listed below.

Operating Instructions

There are a numerous manufacturers of HEPA vacuums. Although all HEPA vacuums operate on the same general principle, they may vary considerably with respect to specific procedures, such as how to change the filters. To ensure the proper use of equipment, the manufacturer's operating instructions should be carefully followed and if possible, training sessions arranged with the manufacturer's representative.

Although HEPA vacuums have the same "suction" capacity as ordinary vacuums that are comparably sized, their filters are more efficient. Improper cleaning or changing of HEPA filters may reduce the vacuum's suction capability.

Special Attachments

Because the HEPA vacuum will be used to vacuum surfaces other than floors, operators should buy attachments and appropriate tool kits for use on different surfaces—such as brushes of various sizes, crevice tools, and angular tools.

Selecting Appropriate Size(s)

HEPA vacuums are available in numerous sizes, ranging from a small lunchbucket-sized unit to track-mounted systems. Two criteria for size selection are the size of the job and the type of electrical power available. Manufacturer recommendations should be followed.

Wet-Dry HEPA Vacuums

Some hazard control contractors have found the wet-dry HEPA vacuums to be particularly effective in meeting clearance standards. These vacuums are equipped with a special shut-off float switch to protect the electrical motor from water contact.

Prefilters

HEPA filters are usually used in conjunction with a prefilter or series of prefilters that trap the bulk of the dust in the exhaust airstream, particularly the larger particles. The HEPA filter traps most of the remaining small particles that have passed through the prefilter(s). All filters must be maintained and replaced or cleaned as specified in the manufacturer's instructions. Failure to do so may cause a reduction in suction power (thus reducing the vacuum's efficiency and effectiveness). Failure to change prefilters may damage the vacuum motor and will also shorten the service life of the HEPA filter, which is far more expensive than the prefilters.

HEPA Vacuuming Procedures

Surfaces frequently vacuumed include ceilings, walls, floors, windows, interior and exterior sills, doors, heating, ventilation, and air conditioning (HVAC) equipment (heating diffusers, radiators, pipes, vents), fixtures of any kind (light, bathroom, kitchen), built-in cabinets, and appliances.

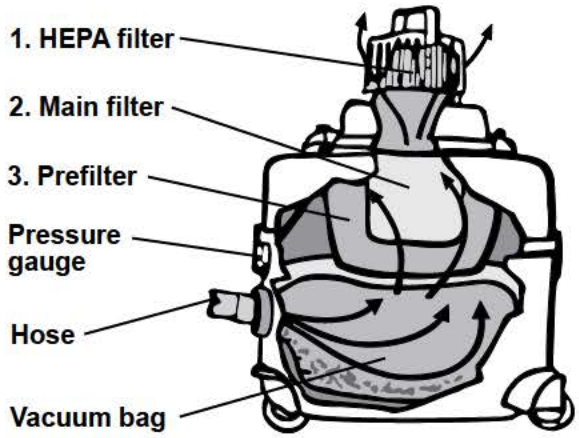
To aid in dislodging and collecting deep dust and lead from carpets, the HEPA vacuum must be equipped with a beater bar (agitator head) that is fixed to the cleaning head. This bar should be used on all passes on the carpet face during dry vacuuming (see Chapter 11 for details on carpet and furniture cleaning).

All rooms and surfaces should be included in the HEPA vacuum process, except for those that (1) were found not to have lead-paint hazards *and* were properly separated from work areas before the process began (see Chapter 8), or (2) were never entered during the process. Porches, sidewalks, driveways, and other exterior surfaces should be vacuumed if exterior hazard control work was conducted, or if debris was stored or dropped outside. Vacuuming should begin on the ceilings and end on the floors, sequenced to avoid passing through rooms already cleaned, with the dwellings' entryway cleaned last.

Emptying the HEPA Vacuum

Used filters and vacuumed debris are potentially hazardous waste and should be treated accordingly (see Chapter10). Therefore, operators should use extreme caution when opening the HEPA vacuum for filter replacement or debris removal to avoid accidental release of accumulated dust into the environment. This may occur, for example, if the vacuum's seal has been broken and the vacuum's bag is disturbed.

Figure 14.1a Vacuum With a HEPA Filter.



Parts of a HEPA-vacuum

Most HEPA-vacuums have three filters: HEPA filter, main filter, and prefilter. Debris gets sucked in through the hose into the vacuum bag. The air and dust get filtered through the prefilter, the main filter, and the HEPA filter. The HEPA filter captures the lead dust before the air is released into the work area again.

Operators should also wear a full set of protective clothing and equipment, including appropriate respirators, when performing this maintenance function, which should be done in the containment area or offsite.

2. Wet Detergent Wash

Several types of detergents have been used to remove leaded dust. Those with a high-phosphate content (containing at least 5 percent trisodium phosphate, also known as TSP) have been found to be effective when used as part of the final cleaning process (Milar, 1982). TSP detergents are thought to work by coating the surface of dusts with phosphate or polyphosphate groups which reduces electrostatic interactions with other surfaces and thereby permits easier removal. Because of environmental concerns some States have restricted the use of TSP, and some manufacturers have eliminated phosphates from their household detergents. However, high-TSP detergents can usually be found in hardware stores and may be permitted for limited use, such as lead hazard control.

Other non-TSP cleaning agents developed specifically for removing leaded dust have also been found to be effective (possibly more effective than TSP) in limited trials by several

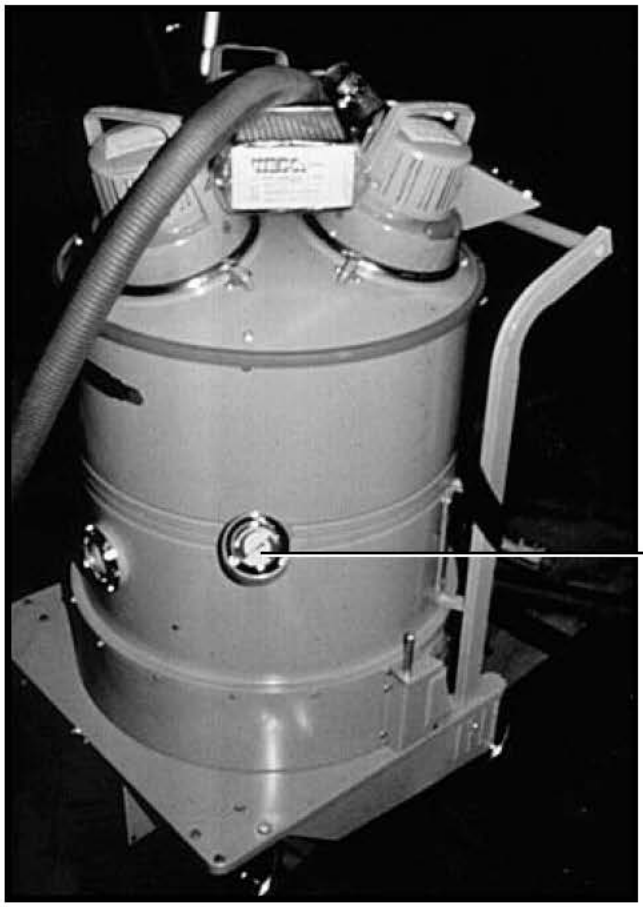
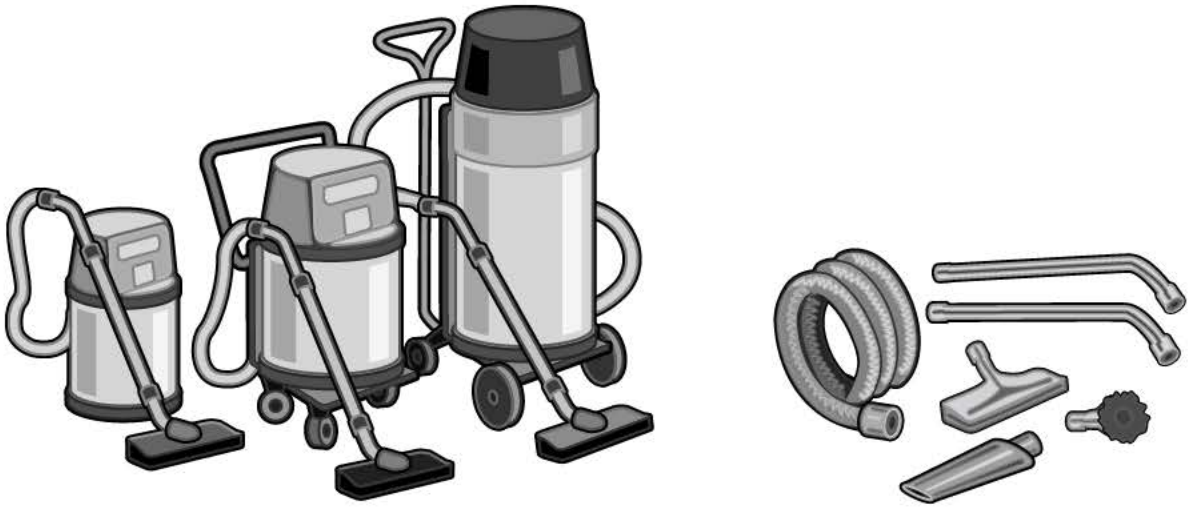


Figure 14.1b Pressure Gauge Indicator Shows When Filters Require Changing.

Figure 14.2 HEPA Vacuum Sizes and Tools.



investigators (Grawe, 1993; Wilson, 1993) and may also be safer, since TSP is a skin and eye irritant. See section VII for more information on non-TSP detergents. Proper procedures for using high-phosphate detergents also apply to most other types of detergents and include the following steps:

Manufacturer's Dilution Instructions

Users of cleaning agents for leaded dust removal should follow manufacturer's instructions for the proper use of a product, especially the recommended dilution ratio. Even diluted, trisodium phosphate is a skin irritant and users should wear waterproof gloves. Eye protection should also be worn, and portable eyewash facilities should be located in or very near the work area. Consult manufacturer's directions for the use of other detergents.

Appropriate Cleaning Equipment

Because a detergent may be used to clean leaded dust from a variety of surfaces, several types of application equipment are needed, including cleaning solution spray bottles, wringer buckets, mops, variously sized hand sponges, brushes, and rags. Using the proper equipment on each surface is essential to the quality of the wet-wash process.

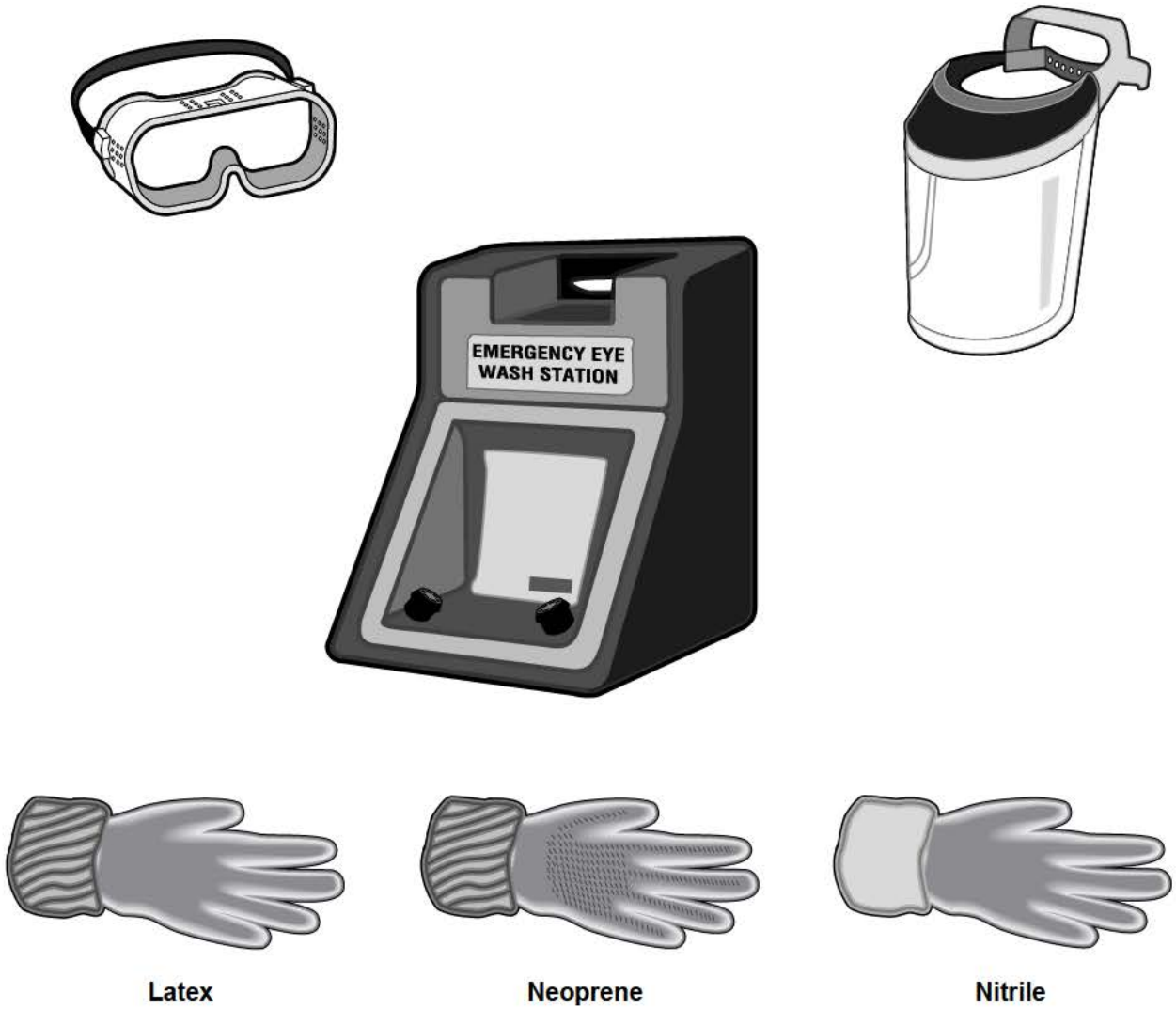
Proper Wet-Cleaning Procedures

At the conclusion of the active lead hazard control process and the initial HEPA vacuuming, all vacuumed surfaces should be thoroughly and completely washed with a high-phosphate solution or other lead-specific cleaning agent (or equivalent) and rinsed. Select a detergent that does not damage existing surface finishes (TSP may damage some finishes). Work should proceed from ceilings to floors and sequenced to avoid passing through rooms already cleaned.

Changing Cleaning Mixture

Many manufacturers of cleaners will indicate the surface area that their cleaning mixture will cover. To avoid recontaminating an area by cleaning it with dirty water, users should follow manufacturer-specified surface-area limits. However, regardless of manufacturers' recommendations, the cleaning mixture should be changed after its use for each room. As a rule of thumb, 5 gallons should be used to clean no

Figure 14.3 Goggles, Face Shields, Gloves, and Eye Wash Facilities Should Be Available When Used With Chemicals Such as TSP.



more than 1,000 square feet. Used cleaning mixture is potentially hazardous waste (see Chapter 10); consult with your local water and sewage utility for directions on its proper disposal. Wash water should never be poured onto the ground. The wash water is usually filtered and then poured down a toilet (if the local water authority approves).

3. The HEPA/Wet Wash/HEPA Cycle

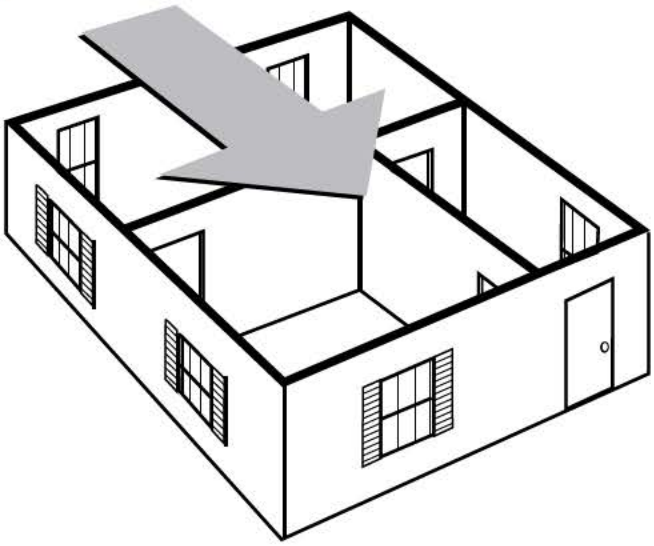
Typical Procedures

The usual cleaning cycle that follows lead hazard control activities is called the HEPA vacuum/wet wash/HEPA cycle and is applied to an entire affected area as follows:

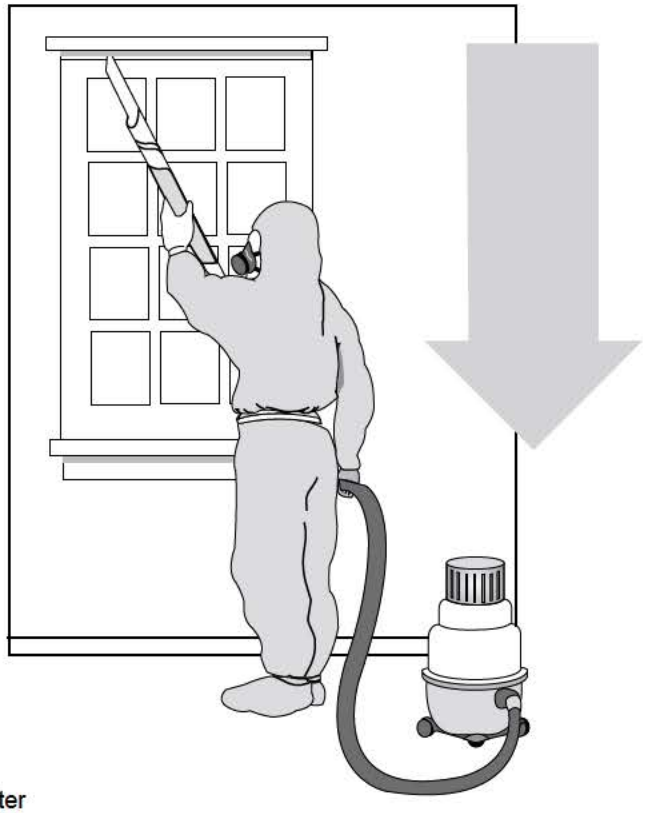
- First, the area is HEPA vacuumed.

Figure 14.4a The HEPA Vacuum, Wet Wash, HEPA Vacuum Cycle Helps in Meeting Clearance Standards.

HEPA vacuum all surfaces
Start at the end farthest from the main entrance/exit. As you vacuum, move towards the main exit and finish there.



Begin at the top of each room and work down. For example, start with the top shelves, the top of the woodwork, and so on, and work down to the floor. Do every inch of the windows, especially the window troughs.



Courtesy: Alice Hamilton Occupational Health Center

- Next, the area is washed down.
- After drying, the area is again HEPA vacuumed.

The rationale for this three-pass system is as follows:

- The first HEPA vacuum removes as much dust and remaining debris as possible.
- The wet wash further dislodges dust from surfaces.
- The final HEPA cycle removes any remaining particles dislodged but not removed by the wet wash.

Single-Pass Wet Wash/HEPA Vacuum

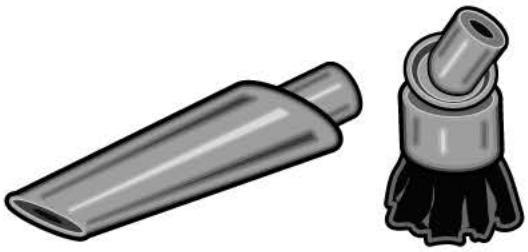
Some lead hazard control contractors have found HEPA spray cleaner vacuums to be a cost-effective alternative to the three-pass system. Similar to home carpet-cleaning machines, these vacuums simultaneously deliver a solution to the surface and recover the dirty solution. Theoretically, this process combines two of the steps in the HEPA vacuum/wet wash/HEPA cycle into one step. While anecdotal evidence indicates that the spray cleaner wet wash/HEPA is effective for some uses, limitations have been noted in its use for ceilings, vertical surfaces, and hard to reach areas. This device may be used as long as clearance standards are met.

Figure 14.4b (continued)

Use special attachments
Use the rubber cone where the floor meets the baseboard and along all the cracks in the floor boards. Use the brush tool for walls and woodwork.

Use the wheeled floor nozzle for bare floors and the carpet beater for rugs.

Move slowly
Vacuum slowly so the HEPA vacuum can pick up all the lead dust.



Rubber Cone **Dust Brush**

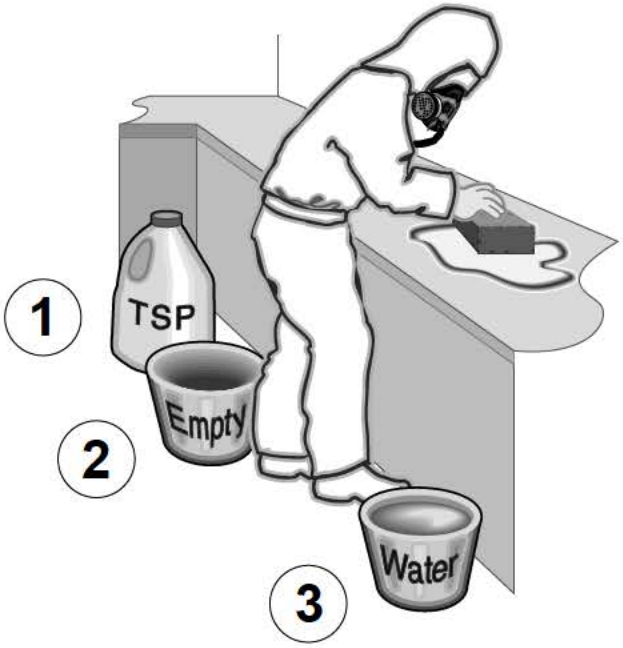
Powered Carpet Beater

Wheeled Floor Nozzle

Figure 14.4c (continued)

Wash all surfaces with suitable detergents

Wash *all surfaces* in the work area with suitable detergents, including areas that had been covered with plastic. Some wallpaper should only be HEPA vacuumed, since it may be damaged by the detergent.



Wipe All Surfaces

Wet Mop Floor

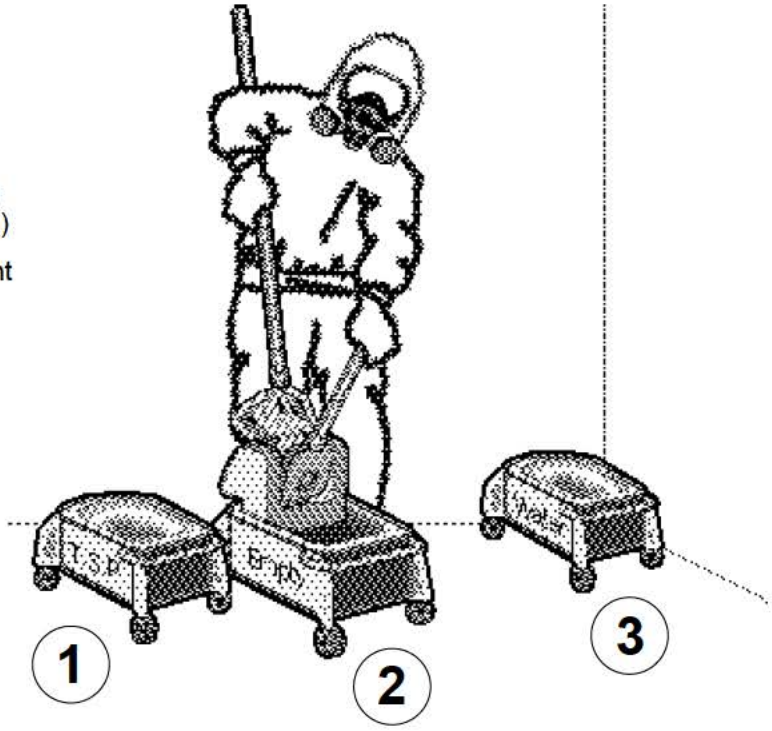
Don't Dry Sweep

Figure 14.4c (continued)

Use the 3-Bucket System.

To wash: Use string mops and mop buckets with wringers. (Some experts say NEVER use a sponge mop on the floor. Sponge mops may only push the lead around on the floor, not remove it.)

Dip the string mophead in the detergent wash in bucket #1. Mop the floor.



Squeeze out the mophead in empty bucket #2. Return to bucket #1 for more detergent solution and continue mopping. Repeat.

Use the third bucket for rinsing the floor.

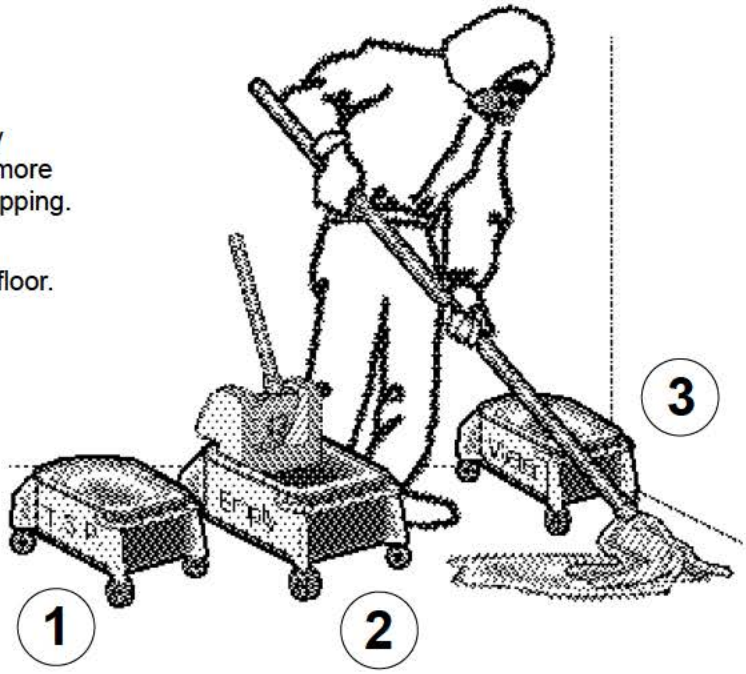
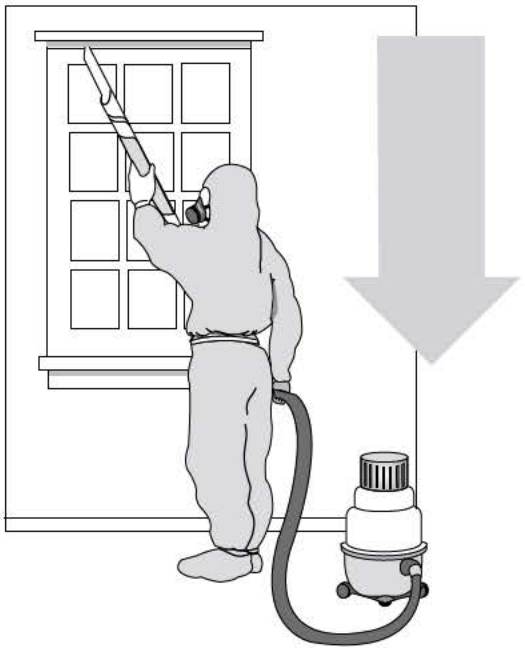


Figure 14.4d (continued)

HEPA vacuum all surfaces a final time
HEPA vacuum *all surfaces* in the work area, including areas that had been covered with plastic.

Starting at the far end, work towards the decontamination area. Begin with ceilings or the top of the walls and work down, cleaning the floors last. Do every inch of the windows, especially the troughs. Use the corner tool to clean where the floor meets the baseboard and all the cracks in the floor boards. Use the brush tool for the walls. Move slowly and carefully to get all the dust.



4. Sealing Floors

Before clearance, all floors without an intact, nonporous coating should be coated. Sealed surfaces are easier for residents to clean and maintain over time than those that are not sealed. Wooden floors should be sealed with a clear polyurethane or painted with deck enamel or durable paint. Vinyl tile, linoleum, and other similar floors should be sealed with an appropriate wax. Concrete floors should be sealed with a concrete sealer or other type of concrete deck enamel. However, if these floors are already covered by an effective coat of sealant, it may be possible to skip this step.

As an alternative to sealing, floors may be covered with new vinyl tile, sheet vinyl, linoleum flooring, or the equivalent to create a more permanent cleanable surface. New surfaces should be cleaned with a cleaning solution that is appropriate for that type of surface.

IV. Order of Cleaning Procedures During Lead Hazard Control

The special cleaning procedures to be followed during a lead-based paint hazard control project are discussed in chronological order below. Skipping steps in the process may result in failure to meet post-lead hazard control clearance standards.

A. Precleaning Procedures

Precleaning (i.e., cleaning conducted before lead hazard control is begun) is necessary only in dwelling units that are heavily contaminated with paint chips. Precleaning involves the removal of large debris and paint chips, followed by HEPA vacuuming. These steps may be followed by removal of occupant personal possessions, furniture, or carpeting, depending on the

Figure 14.5 Single-Pass HEPA Vacuum/Wet Wash Technology.

Worksite Preparation Level selected (see Chapter 8). If the furniture will not be cleaned, it should be removed from the area or covered with plastic prior to beginning the precleaning procedure. Carpeting should always be misted before its removal to control the generation of hazardous dust.

It is usually the resident's responsibility to remove most of his or her personal possessions. However, if necessary, owners or project management should be prepared to complete this activity before lead hazard control work begins. As a last resort, the contractor may pack any remaining belongings and carefully seal and move the boxes, supplying all necessary boxes, packing materials, and staff to complete the task. Following cleaning and clearance, the contractor should return all packed items to their appropriate places. Leaving these tasks to the contractor may be expensive and inefficient, since the contractor will need to be insured for this function if the occupant's

Figure 14.6 Precleaning Is Needed in Areas Where Contamination and Deterioration Are High.

belongings are damaged. Additionally, moving furniture, rugs, drapes, and other items owned by the occupant could increase leaded dust levels. Clearance should be conducted after cleaning but before resident items are moved back in.

B. Ongoing Cleaning During the Job

Periodic HEPA vacuuming during the lead hazard control work may be necessary to minimize tracking of dust and paint chips from one area to another (e.g., when a large amount of paint chips or dust is being generated).

C. Daily Cleaning Procedures

Cleaning activity should be scheduled at the end of each workday when all active lead hazard control throughout the dwelling has ceased. Sufficient time must be allowed for a thorough and complete cleaning (usually about 30 minutes to an hour). Daily cleaning helps achieve clearance dust levels by minimizing problems that may otherwise occur during final cleaning and limiting worker exposures. While daily cleaning can be skipped in vacant dwelling units, it is required when occupants will return in the evening. Under no circumstances should debris or plastic be left outside overnight in an unsecured area, even if the dwelling is vacant. Daily cleaning should consist of:

- Removing large debris.
- Removing small debris.
- HEPA vacuuming, wet clean, HEPA vacuuming (horizontal surfaces only).
- Cleaning exterior.
- Patching and repairing plastic sheeting.
- Securing debris/plastic.

Figure 14.7 Plastic Sheeting Should Be Repaired as Part of Daily Cleanup.

1. Large Debris

Large demolition-type debris (e.g., doors, windows, trim) should be wrapped in 6-mil plastic, sealed with tape, and moved to a secure area on the property designated for waste storage. All sharp corners, edges, and nails should be hammered down to prevent injury and minimize the tearing of plastic. It is not necessary to wrap each individual piece of debris in plastic if the entire load can be wrapped. A secure area either outside or inside the property must be designated as a temporary waste-storage area. Covered, secured, and labeled dumpsters placed on or near the property may be used. Proper segregation of waste should be enforced at this time (see Chapter 10).

2. Small Debris

After being misted with water, small debris should be swept up, collected, and disposed of properly. The swept debris should be placed in double 4-mil or single 6-mil polyethylene (or equivalent) plastic bags, properly sealed, and moved to the designated trash storage area. Trash bags should not be overloaded; overloaded bags may rupture or puncture during handling and transport.

3. Exterior Cleaning

Areas potentially affected by exterior lead hazard control should be protected via a containment system (see Chapter 8). Because weather can adversely affect the efficacy of exterior

containment, the surface plastic of the containment system should be removed at the end of each workday. On a daily basis, as well as during final cleaning, the immediate area should be examined visually to ensure that no debris has escaped containment. Any such debris should be raked or vacuumed and placed in single 6-mil or double 4-mil plastic bags, which should then be sealed and stored along with other contaminated debris. HEPA vacuuming is appropriate for hard exterior surfaces, not soil.

4. Worker Protection Measures

General worker protection measures are discussed in Chapter 9. Studies indicate that during daily cleaning activities, especially while wet sweeping, workers may be exposed to high levels of airborne dust. Therefore, workers should wear protective clothing and equipment, especially appropriate respirators.

5. Maintaining Containment

The integrity of the plastic sheeting used in a lead hazard control project must be maintained. During their daily cleaning activities, workers should monitor the sheeting and immediately repair any holes or rips with 6-mil plastic and duct tape.

V. Order of Final Cleaning Procedures After Lead Hazard Control

Before treated surfaces can be painted or sealed, final cleaning procedures must be completed. Because airborne dust requires time to settle, the final cleaning process should start no sooner than 1 hour after active lead hazard control has ceased in the room. See Appendix 11 for details regarding dust settling.

A. Final Cleaning

As the first stage in the final cleaning, floor plastic should be misted and swept as detailed earlier in this chapter. Upper-level plastic, such as that on cabinets and counters, should be removed first, after it has been misted with water *and cleaned*. All plastic should be folded carefully from the corners/ends to the middle to trap any remaining dust. Next, remove both layers of plastic from the floor.

Plastic sheets used to isolate contaminated rooms from noncontaminated rooms should remain in place until after the cleaning and removal of other plastic sheeting; these sheets may then be misted, cleaned, and removed last.

Removed plastic should be placed into double 4-mil or single 6-mil plastic bags, or plastic bags with equivalent (or better) performance characteristics, which are sealed and removed from the premises. As with daily cleanings, this plastic-removal process usually requires workers to use protective clothing and respirators.

After the plastic has been removed from the contaminated area, the entire area should be cleaned using the HEPA/wet wash/HEPA cycle, starting with the ceiling and working down to the floor. After surfaces are repainted or sealed, a final HEPA/wet wash/HEPA cycle may be necessary if accumulated dust caused by other work is visible.

1. Decontamination of Workers, Supplies, and Equipment

Decontamination is necessary to ensure that worker's families, other workers, and subsequent properties do not become contaminated. Specific procedures for proper decontamination of equipment, tools, and materials prior to their removal from lead hazard control containment areas should be implemented, as described below and in Chapters 9 and 10.

Work clothing, work shoes, and tools should not be placed in a worker's automobile unless they have been laundered or placed in sealed bags. All vacuums and tools that were used should be wiped down using sponges or rags with detergent solutions.

Consumable/disposable supplies, such as mop heads, sponges, and rags, should be replaced, after each dwelling is completed. Soiled items should be treated as contaminated debris (see Chapter 10).

Figure 14.8a Pick Up Corners of Plastic Sheeting.

Figure 14.8b Fold Plastic Inward.

Durable equipment, such as power and hand tools, generators, and vehicles, should be cleaned prior to their removal from the site; the cleaning should consist of a thorough HEPA vacuuming followed by washing.

B. Preliminary Visual Examination

After the preliminary final cleaning effort is completed, the certified supervisor should visually evaluate the entire work area to ensure that all work has been completed and all visible dust and debris have been removed. While the preliminary examination may be performed by the lead hazard control supervisor, contractor, or owner as a preparatory step before the final clearance examination, it does not replace the independent visual assessment conducted during clearance.

If the visual examination results are unsatisfactory, affected surfaces must be retreated and/or recleaned. Therefore, it is more cost effective to have the supervisor rather than the clearance examiner perform this initial examination.

C. Surface Painting or Sealing of Nonfloor Surfaces

The next step of the cleaning process is painting or otherwise sealing all treated surfaces except floors.

Surfaces, including walls, ceilings, and woodwork, should be coated with an appropriate primer and repainted. Surfaces enclosed with vinyl, aluminum coil stock, and other materials traditionally not repainted are exempt from the painting provision.

D. Final Inspection

The final clearance evaluation should take place at least 1 hour after the final cleaning. Clearance has three purposes: 1) to ensure that the lead hazard control work is complete, 2) to detect the presence of leaded dust, and 3) to make sure that all treated surfaces have been repainted or otherwise sealed. Clearance is usually performed after the sealant is applied to the floor. See Chapter 15 for information on clearance examination procedures.

E. Recleaning After Clearance Failure

If after passing the final visual examination, the dwelling unit fails the clearance wipe dust tests,

the HEPA/wet wash/HEPA cleaning cycle should be carefully and methodically repeated. Failure is an indication that the cleaning has not been successful. Recleaning should be conducted under the direct supervision of a certified supervisor. Care should be exercised during the recleaning of "failed" surfaces or components to avoid recontaminating "cleared" surfaces or components.

VI. Cleaning Cost Considerations

An important consideration in determining lead hazard control strategies and methods is the cost and difficulty of required daily and final cleanup operations and the ease with which one can meet dust-clearance standards. A general rule of thumb is that lead hazard control strategies that generate the most dust will have higher cleanup costs and higher initial clearance test-failure rates.

A. Initial Clearance Test Failure Rates

The likelihood of passing final dust-clearance tests is highly correlated with the chosen intervention strategy, methods, and care exercised by the contractor. For example, in one study (HUD, 1991) initial wipe-test failure rates were 14 percent for interior window sills, 19 percent for floors, and 33 percent for window troughs. The pass/fail rates for each surface were strongly associated with the dwelling unit abatement strategy employed. Chemical removal and hand-scraping strategies experi-enced higher failure rates than replacement and encapsulation/enclosure strategies (see Table 14.1).

However, results of the HUD demonstration project indicated that clearance failure is not solely related to abatement method. The report stated that "the diligence and effectiveness of an abatement contractor's cleaning process ... had a major impact on ... the likelihood of the dwelling unit to pass the final wipe test clearance" (HUD, 1991).

Figure 14.8c Dispose of Plastic Sheeting in a Plastic Trash Bag.

B. Key Factors In Effective Cleaning

Effective cleaning will be aided by adequate sealing of surfaces with polyethylene sheeting prior to lead hazard control, proper daily cleaning practices, good worker training, and attention to detail. Where poor worksite preparation is employed, additional cleaning may be required to meet clearance.

C. Special Problems

Surfaces such as porous concrete, old porous hardwood floors, and areas such as corners of rooms and window troughs pose especially difficult cleaning challenges. Porous concrete and corners of rooms normally require additional vacuuming to achieve an acceptable level of cleanliness.

The lead hazard control strategy of enclosure is frequently chosen for window troughs and for old porous hardwood floors due to the difficulty of adequately cleaning these surfaces. This

option provides not only a clean surface but a more permanently cleanable surface for dwelling occupants to maintain.

VII. Alternative Methods

Alternatives to the recommended cleaning tools and practices discussed in this chapter are available, some having significant potential for increasing effectiveness and lowering costs.

A recent Canadian study (CMHC, 1992) evaluated the effectiveness of contaminated dust cleanup activities using tools that would generally be available to construction contractors and homeowners. Vinyl flooring and carpeting were cleaned using several wet/dry vacuuming systems, sweeping, and wet mopping. The study found that regular vacuums with empty bags send a steady stream of fine particles into the air, while vacuums with partially filled bags were more efficient. This finding suggests the necessity for HEPA vacuums. Other vacuums may be used if workers do not experience increased exposures, if compliance with clearance standards is achieved, and if a variance from OSHA regulation (29 CFR 1926.62 (h)(4)) is obtained by the contractor or employer (if required).

Agitator heads on vacuums were demonstrated to significantly enhance vacuum effectiveness on carpets in cleaning up fine dust without increasing airborne dust levels. Table 14.2 suggests that a central vacuum with an agitator head is most efficient at removing dust and minimizing recontamination, probably because the vacuum exhaust is blown away from living areas. Because many houses do not have central vacuuming systems, a portable HEPA vacuum is the next best choice (see Table 14.2). Vacuums without agitator heads appeared to perform relatively poorly on carpets.

A. Vacuums

Regular (non-HEPA) dry vacuums potentially produce hazardous levels of airborne dust and therefore should be avoided. Externally exhausted vacuum units with adequate dust-retaining capability may be used. The OSHA lead standard requires the use of HEPA vacuum equipment (see 29 CFR 1926.62 (h)(4), which states, "where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters").

B. Trisodium Phosphate and Other Detergents

TSP detergents have been used successfully for a number of years in lead hazard control work. However, in recent years, other new cleaning agents have been developed specifically for leaded dust removal. The need for alternatives has been fueled by the fact that TSP is an eye

Table 14.1 Initial Cleaning Wipe-Test Failure Rates for Various Abatement Strategies

Dust Test Location	Hand Scrape w/Heat Gun	Chemical Removal	Enclosure	Encapsulation	Replacement	All Methods
Floors	28.8%	22.7%	20.0%	13.8%	12.5%	19%
Sills	24.4%	24.1%	8.2%	4.8%	17.4%	14%
Wells	44.5%	45.7%	23.7%	25.7%	21.0%	33%

Source: U.S. Department of Housing and Urban Development (August 1991) The HUD Lead-Based Paint Abatement Demonstration (FHA)

and skin irritant and is increasingly restricted from household use and unavailable in many local jurisdictions. TSP also damages some finishes. Recently reported trials of two new products suggest that alternative lead-specific cleaning agents may be more effective and safer than TSP (Grawe, 1993; Wilson, 1993).

These *Guidelines* do not prohibit the use of non-TSP cleaning agents. HUD encourages further evaluation of alternative cleaning methods. Use of any cleaning agent that results in compliance with clearance criteria is encouraged.

Table 14.2 Mass Removal Efficiency for Extended Vacuuming Cycles

Cycle Number	Mass Removal Efficiency Percentages			
	Cleaning Method			
	Central Vacuum—Plain Tool	Central Vacuum—Agitator Head	HEPA Vacuum	Portable Vacuum—Plain Tool
1	34.7	71.0	55.4	17.5
2	47.0	80.2	61.2	23.0
3	51.9	85.9	66.3	26.6
4	56.0	87.8	67.0	29.4
5	59.3	88.9	72.1	32.5
6	61.6	91.2	74.4	34.9
7	63.8	93.1	76.4	36.5
8	67.5	95.4	77.5	38.1
9	67.5	97.7	78.7	40.1
10	67.2	100.0	80.2	41.7
11		102.3	80.2	41.7
12		104.6	84.1	44.8
13		104.6	84.5	46.8
14		103.8	84.5	48.4
15				49.6
16				50.8
17				52.4
18				53.6
19				54.4
20				55.2

Source: Canada Mortgage and Housing Corporation: Saskatchewan Research Council (December 1992) *Effectiveness of Clean-up Techniques for Leaded Paint Dust*

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Auburn Readiness Center
Auburn, NY 13021

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

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Project No. 1061-15
January 29, 2013

Bonus Environmental, LLC

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Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Auburn Readiness Center, Auburn, NY 13021

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Auburn Readiness Center located at 174 South Street in Auburn, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on November 15, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Auburn Readiness Center is an Army National Guard armory comprised of offices, classrooms, locker rooms, storage rooms, a drill hall, a kitchen, a boiler room, mechanical/telecom rooms, a weight room, a dining area, a break room, conference rooms, storage bays, and a former indoor firing range. The point of contact for the approximately 27,381 ft² Auburn Readiness Center is Mr. Non-Responsive Non-Responsive Sixteen (16) full-time administrative personnel are employed at the Auburn Readiness Center. Health and Safety programs available and reviewed include personal protective equipment (PPE), Lock-Out/Tag-Out, Asbestos Awareness, Fire Safety, and Confined Spaces. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twenty four (24) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Auburn Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
Auburn RC-LW-1	11-15-12	Field Blank	---	< 12 μg
Auburn RC-LW-2	11-15-12	Drill Hall, on floor, West end	0.111	< 110
Auburn RC-LW-3	11-15-12	Drill Hall, on floor, East end	0.111	< 110
Auburn RC-LW-4	11-15-12	Drill Hall, on top of Pepsi machine	0.111	120
Auburn RC-LW-5	11-15-12	Drill Hall, on top of vending machine	0.111	220
Auburn RC-LW-6	11-15-12	Drill Hall, on top of AED box	0.111	< 110
Auburn RC-LW-7	11-15-12	Kitchen, on top of ice machine	0.111	< 110
Auburn RC-LW-8	11-15-12	Superintendent's Office, on top of book shelf	0.111	130
Auburn RC-LW-9	11-15-12	HVAC Room, fan side of HVAC Unit	0.111	< 110
Auburn RC-LW-10	11-15-12	HVAC Room, supply side of HVAC Unit	0.111	140
Auburn RC-LW-11	11-15-12	Former Indoor Firing Range, on floor, "bullet trap" area	0.111	2,000
Auburn RC-	11-15-12	Former Indoor Firing Range, on top of storage shelf	0.111	< 110

Army National Guard – Auburn Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-12				
Auburn RC-LW-13	11-15-12	Former Indoor Firing Range, on top of Transfer Switch #1 box	0.111	28,000
Auburn RC-LW-14	11-15-12	Dining Room, on top of microwave	0.111	< 110
Auburn RC-LW-15	11-15-12	Company Maintenance, on top of emergency eye wash	0.111	760
Auburn RC-LW-16	11-15-12	Office 10A, on top of book shelf	0.111	< 110
Auburn RC-LW-17	11-15-12	Men's Locker Room, on top of locker #100	0.111	< 110
Auburn RC-LW-18	11-15-12	1st Floor Hallway, on top of book shelf	0.111	< 110
Auburn RC-LW-19	11-15-12	Storage Room, on top of filing cabinet	0.111	72,000
Auburn RC-LW-20	11-15-12	Office 30, on window sill	0.111	< 110
Auburn RC-LW-21	11-15-12	Office 38, on filing cabinet	0.111	< 110
Auburn RC-LW-22	11-15-12	2nd Floor Hallway, on window sill	0.111	< 110
Auburn RC-LW-23	11-15-12	Conference Room 201, on supplied air grill	0.111	< 110
Auburn RC-LW-24	11-15-12	Office 205, on top of book shelf	0.111	< 110
Auburn RC-LW-25	11-15-12	Office 211, on top of storage cabinet	0.111	< 110

Surface cleanliness threshold = < 200 micrograms per square foot ($\mu g/ft^2$)

It is uncertain whether the former indoor firing range was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area. The bullet trap had been removed from the "bullet trap area".

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Auburn Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC

identified areas of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling paint in the following areas:

- Approximately 30 ft² peeling grey paint in the Boiler Room;
- Approximately 2 ft² peeling grey paint in the Mechanical Room;
- Approximately 40 ft² peeling grey paint in the Former Indoor Firing Range;
- Approximately 4 ft² peeling grey paint in the Storage;
- Approximately 5 ft² peeling grey paint in the Basement Hallway;
- Approximately 1 ft² peeling beige paint in the Office 10A;
- Approximately 1 ft² peeling beige paint in the Office 10B;
- Approximately 4 ft² peeling white paint in the Storage;
- Approximately 2 ft² peeling white paint in the 1st Floor Hallway;
- Approximately 2 ft² peeling white paint in the Office 10A;
- Approximately 4 ft² peeling white paint in the Office 10B;
- Approximately 2 ft² peeling green paint in the 1st Floor Hallway;
- Approximately 2 ft² peeling green paint in the Office 9

Four (4) paint chip samples were collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. See table below for sample information:

Army National Guard – Auburn Readiness Center
Paint Chip Samples

Sample #	*Sample Location*	*Color*	*Analytical Reporting Limit (%)*	*Analytical Results (%)*
AuburnRC-PC-1	Boiler room	Gray	0.0057	0.14
AuburnRC-PC-2	1st floor hallway	Green	0.0053	0.28
AuburnRC-PC-3	1st floor hallway	White	0.0041	0.38
AuburnRC-PC-4	Office 10A	Beige	0.0061	11

Analysis indicated that each of the peeling paints collected contained detectable levels of lead. The paints are therefore each considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Auburn Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Auburn Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC did not identify any areas with water damaged building materials or visible mold problems within the Auburn Readiness Center.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Auburn Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Auburn Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Auburn Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Auburn Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 399 ppm to 692 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild

effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 2.8 ppm to 4.9 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Auburn Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 58.4ºF to 73.6ºF and are not considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Auburn Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 34.8% to 65.2%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Auburn Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, north side of building (sunny)	407	4.9	27.1	54.8
Boiler Room	399	4.1	34.8	69.5
Former Indoor Firing Range	409	3.3	39.7	68.4
Superintendent's Office (3 people in room)	692	4.2	41.1	**62.3**
Office 10A (2 people in room)	448	2.8	36.4	67.1
Classroom 103	410	4.6	35.4	69.9
Break Room 109	421	5.0	35.8	70.2
Conference Room 37	417	4.3	35.4	73.6
Office 208 (6 people in room)	569	4.4	35.6	71.7
Office 40	420	4.2	37.7	73.3
Drill Hall	416	3.0	**65.2**	**58.4**

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Auburn Armory. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Auburn Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Boiler Room	11.4	30	No
Mechanical Room	14.1	30	No
Former Indoor Firing Range	25.3	30	No
Storage	9.2	30	No
Storage	15.4	30	No
Basement Hallway	4.1	5	No
Office (1)	139.4	50	Yes
1st Floor Hallway	125.4	5	Yes
Storage (2)	68.9	30	Yes
Office (3)	101.8	50	Yes
Storage (4)	97.1	30	Yes
Office (5)	44.5	50	No
HVAC Room	43.9	30	Yes
Women's Locker Room	103.0	7	Yes
Women's Restroom	16.8	5	Yes
Women's Shower Area	35.1	7	Yes
Men's Locker Room	37.3	7	Yes
Men's Restroom	41.2	5	Yes
Men's Shower Area	10.5	7	Yes
Office (7)	31.7	50	No
Men's Restroom	12.9	5	Yes
Office (9)	138.7	50	Yes
Office (10A)	54.1	50	Yes
Office (10B)	86.8	50	Yes
Women's Restroom (11)	68.7	5	Yes
Club (Storage) (13)	18.0	30	No
Kitchen (27)	60.1	50	Yes
Storage	64.7	30	Yes
Storage	54.2	30	Yes
Dining Area	50.9	10	Yes
Company Maintenance (storage)	28.3	30	No
Supply	Inaccessible		
Recruiter's Office (101)	22.5	50	No
Classroom (102)	37.6	30	Yes
Break Room (109)	39.8	10	Yes
Classroom (103)	67.4	30	Yes
Men's Restroom	16.2	5	Yes
Women's Restroom	25.9	5	Yes
Classroom (104)	52.6	30	Yes
Pipe Room (106)	25.2	30	No
Storage (105)	Inaccessible		
Drill Hall	15.6	30	No
Storage (1)	24.8	30	No
Storage (2)	Lighting Inoperable		
Storage (3)	25.5	30	No
Storage (4)	61.7	30	Yes
Storage (5)	48.1	30	Yes

Army National Guard – Auburn Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Storage (6)	49.9	30	Yes
Storage (7)	47.6	30	Yes
Storage (14)	89.0	30	Yes
Storage (14A)	48.3	30	Yes
Storage (16)	30.1	30	Yes
Superintendent's Office	116.9	50	Yes
Storage (15)	59.0	30	Yes
Office (17)	21.9	50	No
2nd Floor Hallway	32.6	5	Yes
Computer Room (43)	Inaccessible		
Training Room (42)	Inaccessible		
Men's Restroom (41B)	8.9	5	Yes
Men's Shower Area	8.8	7	Yes
Office (40)	59.7	50	Yes
Office (38)	63.3	50	Yes
Unisex Restroom (39)	32.1	5	Yes
Conference Room (37)	31.1	30	Yes
Office (30)	79.6	50	Yes
Office (31)	38.6	50	No
Office (32)	30.4	50	No
Office (33)	81.7	50	Yes
Office (34)	48.0	50	No
Office (35)	31.2	50	No
Office (36)	23.9	50	No
Telecommunication's Room	77.9	30	Yes
Conference Room (201)	84.8	30	Yes
Office (203)	19.7	50	No
Office (205)	55.2	50	Yes
Office (206)	27.8	50	No
Office (207)	106.6	50	Yes
Office (208)	181.7	50	Yes
Office (209)	162.6	50	Yes
Office (217)	27.2	50	No
Office (210)	100.2	50	Yes
Office (211)	84.5	50	Yes
Office (212)	144.6	50	Yes
Office (213)	163.3	50	Yes
Office (214)	136.7	50	Yes
Office (210) (2 of 4 lights removed to reduce glare on computer screen)	32.6	50	No
Restroom	15.8	5	Yes
Mechanical Room (202)	61.9	30	Yes

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting

Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Auburn Readiness Center located at 174 South Street in Auburn, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on November 15, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Auburn Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:

    - Drill Hall, on top of vending machine
    - Former Indoor Firing Range, on floor, bullet trap area
    - Former Indoor Firing Range, on top of Transfer Switch #1 Box
    - Company Maintenance, on top of emergency eye wash
    - Storage Room, on top of filing cabinet

2. Bonus Environmental, LLC identified areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard. Peeling lead-based paint was found in the following areas:

    - Approximately 30 ft² peeling grey paint in the Boiler Room;
    - Approximately 2 ft² peeling grey paint in the Mechanical Room;
    - Approximately 40 ft² peeling grey paint in the Former Indoor Firing Range;
    - Approximately 4 ft² peeling grey paint in the Storage;
    - Approximately 5 ft² peeling grey paint in the Basement Hallway;
    - Approximately 1 ft² peeling beige paint in the Office 10A;
    - Approximately 1 ft² peeling beige paint in the Office 10B;
    - Approximately 4 ft² peeling white paint in the Storage;
    - Approximately 2 ft² peeling white paint in the 1st Floor Hallway;
    - Approximately 2 ft² peeling white paint in the Office 10A;
    - Approximately 4 ft² peeling white paint in the Office 10B;
    - Approximately 2 ft² peeling green paint in the 1st Floor Hallway;

- Approximately 2 ft² peeling green paint in the Office 9

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC did not identify any areas of water damage or visible mold throughout the Auburn Readiness Center.

5. Bonus Environmental, LLC found the housekeeping practices within Auburn Readiness Center in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Auburn Readiness Center. All were found to be within their acceptable ranges/limits; with the exception of two (low) temperature readings and one (high) humidity reading.

8. Areas within the Auburn Readiness Center facility were identified as improperly illuminated.

9. Health and Safety programs available and reviewed at the Auburn Readiness Center included personal protective equipment (PPE), Lock-Out/Tag-Out, Asbestos Awareness, Fire Safety, and Confined Spaces. All were found to meet regulatory requirements.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings,

conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

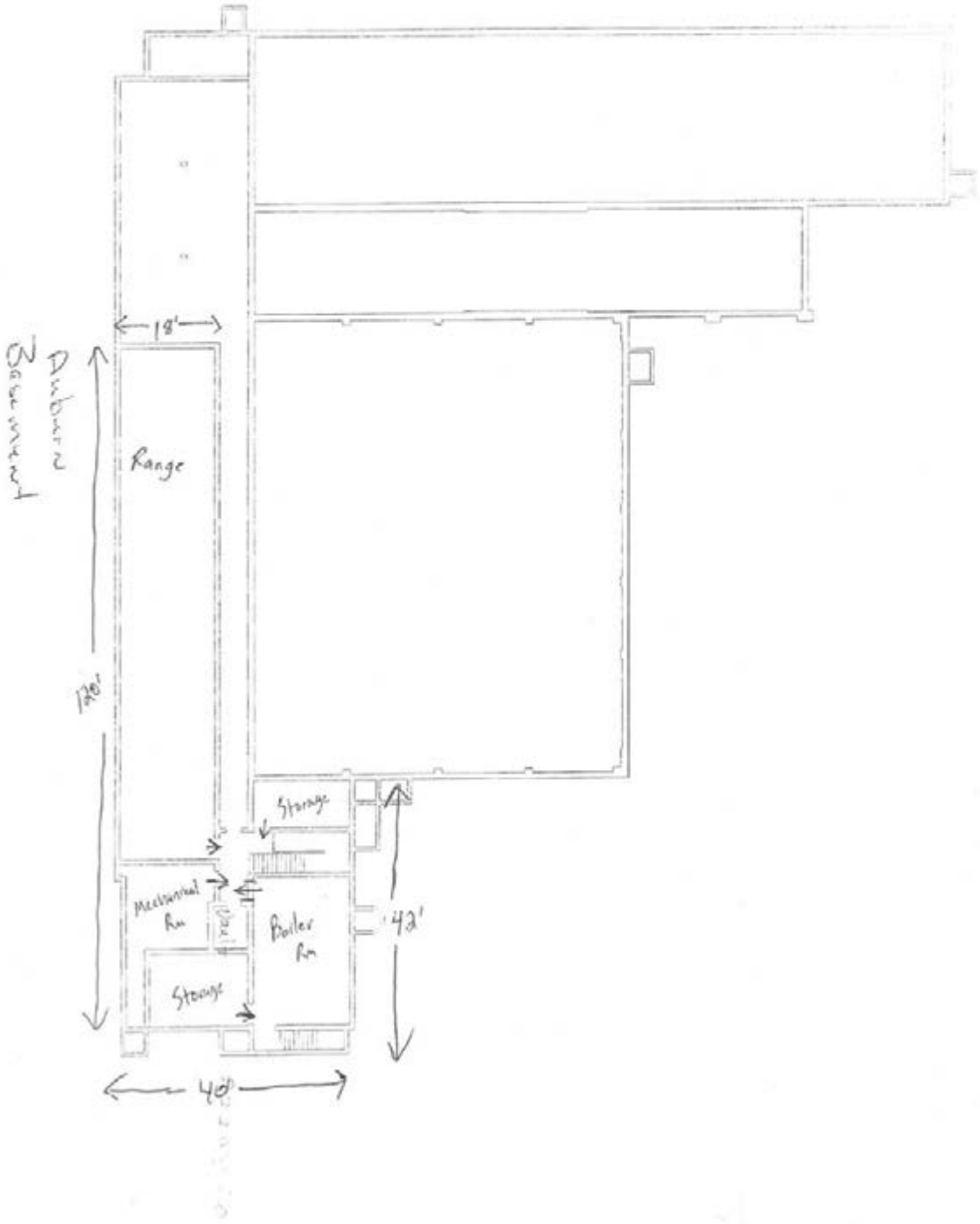
Sincerely,

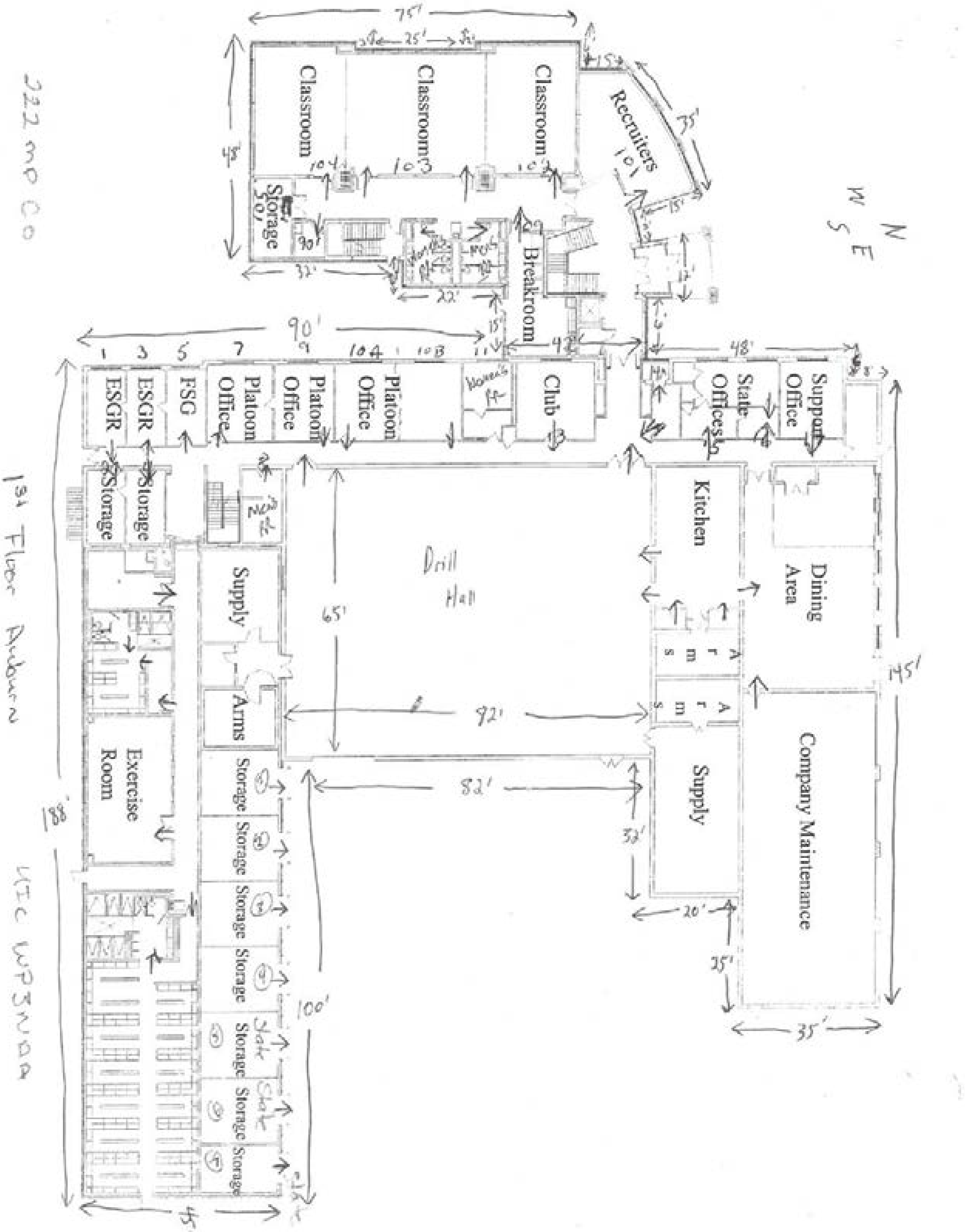
Non-Responsive

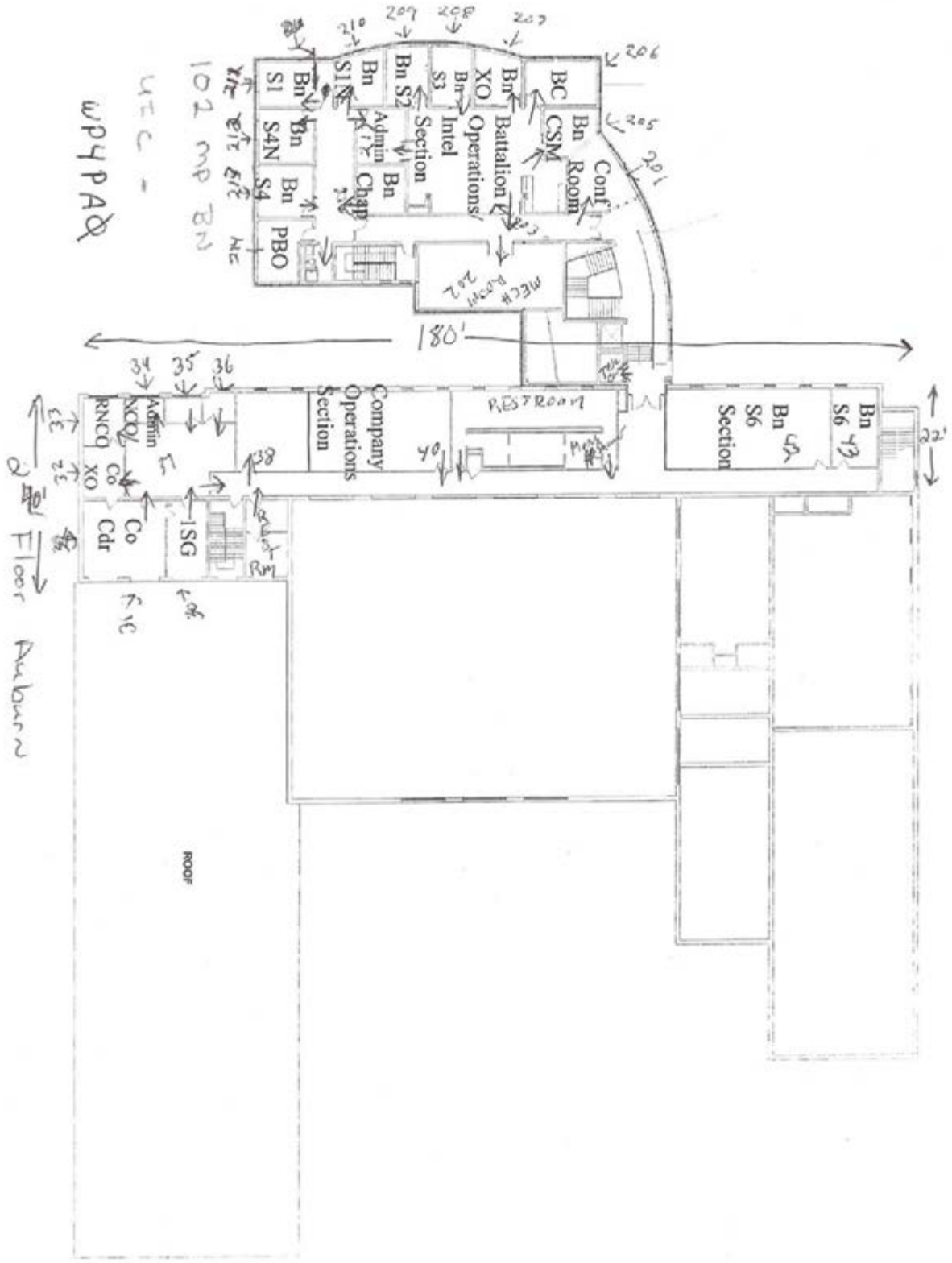
Principal
Bonus Environmental, LLC

Appendix A

Shop Diagram and Air Flow Patterns




222 MP Co
1st Floor Auburn
UIC WP3NDA
Classroom
Classroom
Classroom
Recruiters
Storage
Breakroom
ESGR
ESGR
FSG
Platoon Office
Platoon Office
Platoon Office
Club
State Offices
Support Office
Storage
Storage
Supply
Arms
Drill Hall
Kitchen
Dining Area
Arms
Arms
Supply
Company Maintenance
Exercise Room
Storage
Storage
Storage
Storage
Storage
Storage
Storage
75'
48'
90'
65'
92'
82'
145'
188'
100'
35'



Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Auburn RC	Chain Of Custody:	514536		
Address:	301-HI Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	174 South Street, Auburn, NY 13021	Date Submitted:	11/21/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Responsive		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/30/2012	Report Date:	1/2/2013
Attention:	Non-Responsive			Revision Number:	1	Revised Date:	1/2/2013

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016403	AuburnRC-PC-1	Flame	Paint Chip	****	N/A	0.0057	%Pb		0.14	%Pb	
13016404	AuburnRC-PC-2	Flame	Paint Chip	****	N/A	0.0053	%Pb		0.28	%Pb	
13016405	AuburnRC-PC-3	Flame	Paint Chip	****	N/A	0.0041	%Pb		0.38	%Pb	
13016406	AuburnRC-PC-4	Flame	Paint Chip	****	N/A	0.0061	%Pb		11	%Pb	
13016407	AuburnRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13016408	AuburnRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016409	AuburnRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016410	AuburnRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	13	120	ug/ft²	
13016411	AuburnRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	25	220	ug/ft²	
13016412	AuburnRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016413	AuburnRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016414	AuburnRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	15	130	ug/ft²	
13016415	AuburnRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016416	AuburnRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	15	140	ug/ft²	
13016417	AuburnRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	230	2000	ug/ft²	
13016418	AuburnRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016419	AuburnRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	3100	28000	ug/ft²	
13016420	AuburnRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016421	AuburnRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	84	760	ug/ft²	

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Client:	National Guard Bureau	Job Name:	Auburn RC	Chain Of Custody:	514536		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	174 South Street, Auburn, NY 13021	Date Submitted:	11/21/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	Non-Responsive		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/30/2012	Report Date:	1/2/2013
Attention:	Non-Responsive			Revision Number:	1	Revised Date:	1/2/2013

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016422	AuburnRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016423	AuburnRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016424	AuburnRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016425	AuburnRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft²	8000	72000	ug/ft²	
13016426	AuburnRC-LW-20	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016427	AuburnRC-LW-21	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016428	AuburnRC-LW-22	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016429	AuburnRC-LW-23	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016430	AuburnRC-LW-24	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016431	AuburnRC-LW-25	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

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		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/30/2012	Report Date:	1/2/2013
Attention:	Non-Responsive			Revision Number:	1	Revised Date:	1/2/2013

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Analy[redacted] Non-Responsive

Technical Manager[redacted] Non-Responsive

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Appendix C

Photographs

Building exterior, looking southeast

Dining room

Company Maintenance (4 storage bays)

Company Maintenance, emergency eyewash

Kitchen

Drill Hall

Office 10A, peeling beige paint

1st floor hallway, peeling white paint

HVAC room, air handling unit

Weight room

Former indoor firing range

Boiler room

Boiler room, peeling gray floor paint

2nd floor hallway

Storage room 3, flammables cabinet

Appendix D

References

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

8 MAY 2006

MEMORANDUM FOR Region North Industrial Hygiene Office (NGB-AVS-SI-IH/ Ms. Non-Responsive), Army National Guard Bureau, 301-IH Old Bay Lane, Havre de Grace, MD 21078

SUBJECT: New York Army National Guard Facilities Industrial Hygiene Survey, Batavia Armory, Batavia, New York, Report No. 55-ML-048L-05/06

1. We are enclosing a copy of the subject report with an Executive Summary.

2. Our point of contact is Mr. Non-Responsive, at commercial (410) 436-5475/3118, DSN 584-5475/3118 or electronic mail: Non-Responsive@us.army.mil

FOR THE COMMANDER:

Non-Responsive

Director, Occupational Health Sciences

Encl

Readiness thru Health

U.S. Army Center for Health Promotion and Preventive Medicine

USCHPPM

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/06
NEW YORK ARMY NATIONAL GUARD
BATAVIA ARMORY
BATAVIA, NEW YORK
5 OCTOBER 2005

[redacted]

[redacted]

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

Readiness Thru Health

DESTRUCTION NOTICE - Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE SURVEY
REPORT NO.55-ML-048L-05/06
NEW YORK ARMY NATIONAL GUARD
BATAVIA ARMORY
BATAVIA, NY
5 OCTOBER 2005

1. PURPOSE. To conduct surveys at the Batavia, New York Army National Guard (NYARNG) facility to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

2. CONCLUSIONS.

a. Lead Exposure. Levels of lead in dust that exceeded safe limits for adults and children were identified. These levels may result in health hazards to adults and to children visiting the Armory. Personnel working in the Armory may have been tracking dust containing lead throughout the facility. Cleaning areas with elevated levels of lead in dust will prevent lead from becoming redistributed throughout the Armory.

b. Asbestos. Potential exposures to asbestos in the Armory are not expected to be a significant health risk unless sections of the floor tile in the Dining Hall and Classroom areas are disturbed. The building was originally constructed with asbestos-containing building materials used for insulation and floor tile. As required by Army policy, the Batavia Armory must develop an Asbestos Management Plan (AMP) and take immediate corrective action where possible asbestos hazards have been identified.

c. Safety and Occupational Health Programs. The Batavia Armory did not have a Hazard Communication (HAZCOM) Program.

d. Heating, Ventilation and Air Conditioning (HVAC) Systems. There was no maintenance program in place for the HVAC system.

e. Lighting. In the professional judgment of the project officer, the lighting levels were adequate.

f. Indoor Air Quality (IAQ). The IAQ parameters in the facility were within guidelines.

g. Other Building Concerns.

(1) Housekeeping. Unncessary material in the Drill Hall constituted a tripping hazard.

(2) Fire Extinguishers. Access to one fire extinguisher was blocked and another was being used as a doorstop.

3. RECOMMENDATIONS.

a. Lead Exposure. Health Risk Assessment Code (RAC) 3 for child exposures. Health RAC 4 for adult exposures. Clean horizontal surfaces in the administrative areas to the National Guard Bureau (NGB) Region North and US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended level. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the Drill Hall, Indoor Firing Range (IFR) and basement stairway areas to the Environmental Protection Agency and State of New York lead in dust standards for young children, and clean other horizontal surfaces in the IFR, Vault, Basement Storage and Boiler Rooms to the NGB Region North and USACHPPM recommended level. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when working in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. Health RAC 3.

(1) Review office records at Armory and the New York State Division of Military and Naval Affairs to determine if there is an AMP for Batavia Armory.

(2) Perform an asbestos survey if no records are located.

(3) Develop and implement an AMP if there is not one for the Armory.

c. HAZCOM. Health RAC 3. Develop a written HAZCOM Program that is specific to the Batavia Armory. Review it annually to ensure any changes in policies, procedures or operations have been evaluated.

d. Heating, Ventilation, and Air Conditioning Systems. Health RAC 4. Develop and implement a maintenance program. The plan should include provisions for regularly scheduled maintenance of the heating and cooling systems.

e. Lighting. Quantify light levels in follow-on assessments. In the professional judgment of the project lead the lighting was adequate.

f. IAQ. Health RAC 5. No recommendation required.

g. Other Building Concerns. Safety RAC 3.

(1) Housekeeping. Remove material in the Drill Hall and in front of the ladder to the roof, and either discard it or place it in an appropriate storage area.

(2) Fire Extinguishers. Ensure that all fire extinguishers are accessible and properly mounted.

NYARNG IH Survey, Report No. 55-ML-048L-05/06, Batavia Armory, Batavia, NY

CONTENTS

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/06
NEW YORK ARMY NATIONAL GUARD
BATAVIA ARMORY
BATAVIA, NEW YORK
5 OCTOBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE. To conduct surveys at the Batavia, New York Army National Guard (NYARNG) facilities to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Electronic mail: MDARNG, Ms. Non-Responsive, 27 July 2005, subject: SAB.

4. BACKGROUND.

a. Date of Construction. The construction date was 1963.

b. Size of Facility. The facility had a floor area of approximately 14,000 square foot. It was a one story building.

c. Mission. Support activities for the 108th Infantry Battalion.

d. Armory Use by Children. The point of contact (POC) stated that children occupied the facility occupationally during special events.

e. POC. The POC was Mr. Non-Responsive, Facilities Management Supervisor, 250 Weidner Rd, Rochester, NY, 14020-1275, Phone: (585) 783-5300.

5. FACILITY EVALUATION.

a. Sampling. Surface lead in dust, bulk, and air sampling was conducted to determine the existence of lead and asbestos hazards. Results are shown in Appendix B.

b. Physical Condition of Facilities.

(1) Paint. The date of construction of the facility indicated that the use of lead in paint was likely. The painted surfaces throughout the building were in good condition. No chipping or peeling was observed.

(2) Asbestos. The POC reported that the building was believed to contain some asbestos-containing building material (ACBM) but was unaware of any surveys or abatement conducted at the facility. No asbestos management plan (AMP) was found. Three bulk samples were collected, one from pipe insulation and two from floor tiles.

(3) Mold and Moisture Problems. No mold or moisture problems were observed or reported.

(4) Building Physical Condition. The building was in good physical condition, but housekeeping was inadequate. A new boiler had recently been installed.

(5) Indoor Firing Range (IFR). The POC reported that lead abatement in the IFR had been completed and the area was not in use.

c. Safety and Occupational Health Programs. The POC stated that the facility did not have a written Hazard Communication (HAZCOM) Program.

d. Heating, Ventilation, and Air Conditioning (HVAC) Systems. The POC stated that the building was heated by an oil-fired boiler and cooled using window-mounted air conditioning units. The building did not contain ventilation ductwork. There was no scheduled maintenance of the heating system or the air conditioning units.

e. Noise Dosimetry. No operations with the potential to generate hazardous noise levels were identified.

f. Lighting. The scope of work for this survey called for measurement of lighting levels in areas where there may have been a potential problem, based on professional judgment. The National Guard Bureau (NGB) verbally requested that light levels be measured throughout facilities. Due to miscommunication, the project lead visiting this site did not quantify light levels, but did use professional judgment in assessing the lighting levels.

g. Indoor Air Quality (IAQ). The IAQ assessment included measuring temperature in degrees Fahrenheit (ºF), relative humidity (RH) in percent,carbon dioxide (CO_2) levels in parts per million (ppm) in different locations throughout the facility. Measurements were made in the Classroom, Drill Hall, Dining Hall, and IFR. The American Society of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE) recommends maintaining 71-81º F in the summer, CO_2 levels below the value of 700 ppm plus the outdoor ambient level (approximately 380 ppm), and 30-60 percent RH.

h. Other Building Concerns.

(1) Housekeeping. A lack of housekeeping was evident in several areas of the building. It was particularly noticeable in the Drill Hall, where paint cans, boxes, water hose, and debris were lying on the floor. The area in front of the ladder leading to the roof contained miscellaneous equipment. These were serious tripping hazards. See photographs in Appendix D.

(2) Fire extinguishers. In the Drill Hall, access to one fire extinguisher was completely blocked by chairs. In another area of the building, a fire extinguisher was being used as a door stop. See photographs in Appendix D.

6. ASSESSMENT CRITERIA FOR LEAD. See Appendix C.

a. Lead in Air. The Army complies with the Occupational Safety and Health Administration (OSHA) 8-hour time-weighted average Permissible Exposure Limit of 50 micrograms of lead per cubic meter ($\mu g/m^3$) of air.

b. Lead in Dust. The Environmental Protection Agency (EPA) and State of New York limits for lead in dust are 40 micrograms per square foot ($\mu g/ft^2$) on floors, 250 $\mu g/ft^2$ on windowsills, and 400 $\mu g/ft^2$ in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The US Army Center for Health Promotion and Preventive Medicine (USACHPPM) applies these limits to areas of Army National Guard facilities that children may occupy, regardless of the amount of time that children occupy them. The NGB Region North concurs with the USACHPPM recommended maximum level of 200 $\mu g/ft^2$ on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA/State standards. This limit was adopted from OSHA guidance in Compliance Letter 02-02-58.

c. Lead in Paint. Paint containing lead levels of 0.5 percent or more by weight in dried solid (also reported as 5,000 milligrams per kilogram) is considered to be lead-based paint according to both Federal and New York State Regulations.

d. Lead Carcinogenicity. The Department of Health and Human Services National Toxicology Program (NTP) released the Report on Carcinogens, Eleventh Edition in February 2005. The NTP report lists "lead and lead compounds" as "reasonably anticipated to be human carcinogens."

7. SAMPLING RESULTS, DISCUSSION, AND CONCLUSIONS.

a. Lead in Dust. Lead in dust sample locations and analytical results are shown in Appendix B. Sample results greater than 40 µg/ft² for floors or 200 µg/ft² for other surfaces are highlighted. Three of the lead in dust sample results exceeded the EPA and the State of New York lead exposure standard for children of 40 µg/ft² on floors and 250 µg/ft² on windowsills. These levels are hazardous to children exposed to lead dust through physical contact, inhalation, or ingestion of lead dust while visiting the Armory. Other areas of the building had elevated lead levels. The highest level was found in the basement Storage Room. Personnel working in this room were potentially exposed to lead, and could be tracking lead out of the area and redistributing it into adjacent rooms in the Armory. This can result in lead exposures for the general workforce and for children visiting this facility.

b. Lead in Air. General area lead in air sampling was conducted in the Drill Hall, Dining Hall, Classroom, and IFR. The air sample results were less than 7 µg/m³, and were below the OSHA standard of 50 µg/m³ for lead in air over an 8 hour day.

c. Asbestos. The pipe insulation sample collected from Room 13 was negative for asbestos. The floor tile samples collected in the Dining Room and Classroom were ACBM. Floor tiles may become friable and release fibers, resulting in exposure to Armory occupants.

d. IAQ. The temperature averaged 69º F, the RH averaged 67 percent, and CO_2 levels averaged 437 ppm. All values were within ASHRAE recommendations.

8. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Lead Exposure. Health RAC 3 for child exposures. Health RAC 4 for adult exposures. Clean horizontal surfaces in the administrative areas to the NGB Region North and USACHPPM recommended level. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the Drill Hall, IFR and basement stairway areas to the EPA and State of New York lead in dust standards for young children, and clean other horizontal surfaces in the IFR, Vault, basement storage and Boiler Rooms to the NGB Region North and USACHPPM recommended level. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when working in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. Health RAC 3.

(1) Review office records at Armory and the New York State Division of Military and Naval Affairs to determine if there is an AMP for Batavia Armory.

(2) Perform an asbestos survey if no records are located.

(3) Develop and implement an AMP if there is not one for the Armory.

c. HAZCOM. Health RAC 3. Develop a written HAZCOM Program that is specific to the Batavia Armory. Review it annually to ensure any changes in policies, procedures or operations have been evaluated.

d. HVAC Systems. Health RAC 4. Develop and implement a maintenance program. The plan should include provisions for regularly scheduled maintenance of the heating and cooling systems.

e. Lighting. Quantify light levels in follow-on assessments.

f. IAQ. Health RAC 5. No recommendation required.

g. Other building concerns. Safety RAC 3.

(1) Housekeeping. Remove material in the Drill Hall and in front of the ladder to the roof, and either discard it or place it in an appropriate storage area.

(2) Fire Extinguishers. Ensure that all fire extinguishers are accessible and properly mounted.

9. PHOTOGRAPHS (Appendix D)

NYANG IH Survey, Report No. 55-ML-048L-05/06, Batavia Armory, Batavia, NY

10. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report, please contact the undersigned at DSN 584-3118, commercial 410-436-3118, or by electronic mail: Non-Responsive @us.army.mil

Non-Responsive
Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive
Program Manager
Industrial Hygiene Field Services Program

BEST AVAILABLE COPY

APPENDIX A

REFERENCES

1. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910, current ed.
http://www.osha.gov/comp-links.html

2. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality.
http://www.ashrae.org

3. Illuminating Engineering Society of North America, ANSI/IESNA, RP-I 1993, Office Lighting.

4. American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values for Chemical Substances and Physical Agents, 2005.

5. Department of Health and Human Services National Toxicology Program (NTP) Substance Profiles, Report on Carcinogens, 11th Edition, Lead and Lead Compounds (CAS No. 7439-92-1) February 2005.

6. EPA 40 CFR Part 745, Lead; Identification of Dangerous Levels of Lead; Final Rule, 5 Jan 2001.

7. American Conference of Governmental Industrial Hygienists (ACGIH), Industrial Ventilation, 25th edition, 2004.

8. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, 19 August 1998.
http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

9. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000.
http://www.usapa.army.mil/pdffiles/p4C_503.pdf

10. Environmental Protection Agency, Title 40 CFR, Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart M-National Emission Standard for Asbestos.

11. OSHA Directive CPL 02-02-58, Lead Exposure in Construction; Interim Final Rule – Inspection and Compliance Procedures, December 13, 1993.

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APPENDIX B

Lead in Surface Dust Locations and Analytical Results.

Wipe Sample Number	**Location of Samples**	**Result (µg/ft²)**
BAW-01	Drill Hall – NW Corner	390
BAW-02	Drill Hall –NE Corner	28
BAW-03	Drill Hall – SE Corner	19
BAW-04	Drill Hall – SW Corner	34
BAW-06	Drill Hall – Center	5.8
BAW-07	ICFR – Bullet Trap Area –Floor	72
BAW-08	ICFR – Bullet Trap Area – Wall	76
BAW-09	ICFR – Light Fixture	500
BAW-11	ICFR –Heating Unit	670
BAW-12	ICFR –Outside Door	6.4
BAW-13	Basement Stairway	900
BAW-14	Classroom, Room 11	3.8
BAW-16	Dining Hall	59
BAW-17	Kitchen	5.4
BAW-18	Vault	280
BAW-19	Office File Cabinet	4.5
BAW- 21	Main Power Switch Box Top, Room 22	9700
BAW- 22	Circuit breaker Box Top, Boiler Room	660

Lead in Air Locations and Analytical Results.

Air Sample Number	**Location of Samples**	**Result (µg/m^3)**
BAA-01	Drill Hall	<6.9
BAA-02	IFR	<6.6
BAA-03	Classroom	<6.2
BAA-04	Dining Hall	<6.2

Bulk Asbestos locations and Analytical Results.

Air Sample Number	**Location of Samples**	**% chrysotile/NAD = no acm detected**
BAB-01	Pipe Insulation, Room 13	NAD
BAB-02	Brown Floor Tile, Dining Room	3
BAB-03	Black Floor Tile, Classroom	5

APPENDIX C

SUBJECT: National Guard Bureau Region North Industrial Hygiene Office Proposed Recommendations for Surface Lead in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,

NYARNG IH Survey, Report No. 55-ML-048L-05/06, Batavia Armory, Batavia, NY

APPENDIX D

Drill hall – NW corner

Drill hall – NE corner

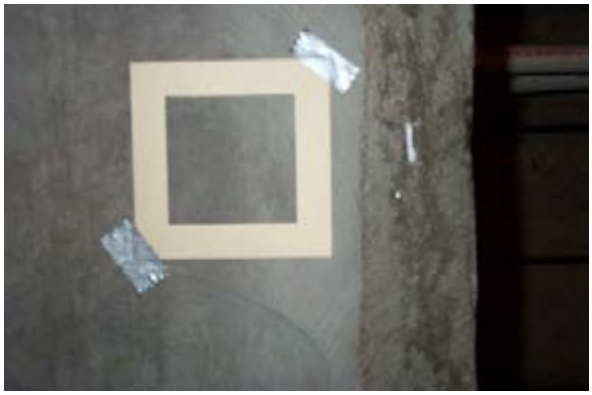
Drill hall – SE corner

Drill hall – SW corner

NYARNG IH Survey, Report No. 55-ML-048L-05/06, Batavia Armory, Batavia, NY

Drill hall – center

IFR – bullet trap area floor



IFR bullet trap area wall

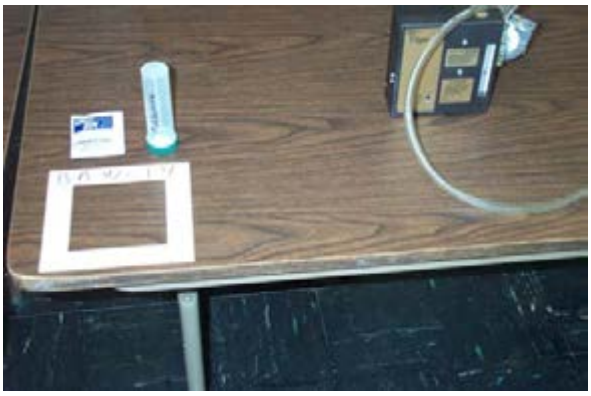
IFR light fixture

NYARNG IH Survey, Report No. 55-ML-048L-05/06, Batavia Armory, Batavia, NY

IFR – heating unit

IFR – door outside

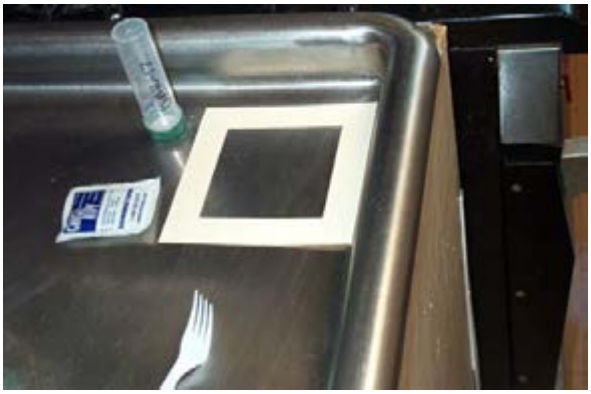
Basement stairway



Classroom – room 11

NYARNG IH Survey, Report No. 55-ML-048L-05/06, Batavia Armory, Batavia, NY

Dining hall



Kitchen

Office – file cabinet top

Vault

NYARNG IH Survey, Report No. 55-ML-048L-05/06, Batavia Armory, Batavia, NY

Pipe insulation – room 13

Blocked fire extinguisher – drill hall

Fire extinguisher used as door stop

Debris at bottom of roof

Environmental and Occupational Risk Management®

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February 10, 2009

Ms. Non-Responsive
NGB Region North IH Office
301 – IH Old Bay Lane
Havre De Grace, MD 21078
Non-Responsive@us.army.mil

Re: Results of Industrial Hygiene Survey, 85 West End Street, Binghamton, NY
EORM® Project No. NATL0009

Dear Ms. Non-Responsive:

At your request, on September 2, 2008, Environmental & Occupational Risk Management, Inc. (EORM®) performed an industrial hygiene survey at the National Guard Readiness Center located at 85 West End Street, Binghamton, NY 13905. The observations, methodology, results and discussion are provided in the sections that follow. Should you have any questions please do not hesitate to contact me.

Regards,

Non-Responsive

Non-Responsive, MPH
Associate EHS Consultant
EORM, Inc.
Telephone 781.756.3813
E-mail Non-Responsive@eorm.com

Reviewed by:

Non-Responsive

Non-Responsive, CIH
Senior EHS Consultant
EORM, Inc.

Attachments

Industrial Hygiene Survey

National Guard Readiness Center
85 West End Street
Binghamton, NY 13905

Project No. NATL0009

2 September 2008

Prepared by:

Environmental and Occupational Risk Management®

400 West Cummings Park
Suite 5850
Woburn, MA 01801

Table of Contents

Executive Summary

Environmental and Occupational Risk Management, Inc. (EORM®) was contracted by the National Guard Bureau Industrial Hygiene Region North Office (NGB IH Office) to perform a baseline industrial hygiene (IH) survey of selected Readiness Centers and administrative buildings located in New York. This report summarizes the results of the Binghamton Readiness Center located at 85 West End Street, which occurred on September 2, 2008.

During the IH survey, EORM collected surface wipe samples and personal air samples for lead. The results indicate that lead remains on surfaces within the old indoor firing range, which has been converted to a locker room. In addition, surface lead was identified on several areas of the first and second floors. However, the surface lead did not translate into detectable concentrations of lead on the personal breathing zone samples collected concurrently. EORM recommends that all rooms with detectable surface lead be decontaminated by a contractor specializing in lead decontamination.

The Binghamton Readiness Center is home to the 204th Engineer Combat Battalion. The facility has two drill halls, one of which is used by FMS-13 for vehicle maintenance. In general the Readiness Center was in good condition with no peeling paint, water stains, or stained ceiling tiles. The only confirmed asbestos containing materials were floor tiles, which were undamaged. The pipe insulation was intact. The main hallways, floors, and desktops were clean and dust free; however, a lot of dust was built up behind computers, on shelving, and on air conditioners.

The results of the indoor air quality survey indicate that there is a sufficient amount of outdoor air being supplied to the occupied space of the Binghamton Readiness Center.

Introduction

Environmental and Occupational Risk Management, Inc. (EORM) was contracted by National Guard Bureau Industrial Hygiene Region North Office (NGB IH Office) to perform an industrial hygiene (IH) survey of selected National Guard Armories located in New York. This report summarizes the results of the Readiness Center located at 85 West End Street, Binghamton, New York. The IH survey was performed on September 2, 2008 by Mr. Non-Responsive, Associate EHS Consultant. Ms. Amy Boas, CIH, Senior EHS Consultant, reviewed this report and provided project support. The scope of work completed during this survey included the following:

- Collect wipe samples for lead from surfaces within the drill hall, administration building, and the converted indoor firing range, if present
- Collect personal or general area full-shift samples for lead on National Guard members during normal activities
- Inspect the physical condition of the facility and personnel concerns
- Evaluate the heating, ventilating, and air conditioning system
- Conduct a lighting survey in all areas of the facility
- Evaluate the attached garage, if present
- Collect photographs of the interior and exterior conditions of the Readiness Center
- Provide a diagram of the shop layout
- Prepare a detailed report of findings and sampling results, including recommendations for improvement in any areas of concern and conclusion

EORM's survey activities were aided by the generous assistance of Mr. Non-Responsive and employees who provided information on Readiness Center.

Industrial Hygiene Survey Details

The wipe samples were collected and analyzed in accordance with the Occupational Safety and Health Administration (OSHA) method ID-125G. The samples were analyzed for lead by AMA Analytical Services, Inc. in Lanham, Maryland. AMA is accredited by the American Industrial Hygiene Association.

The analytical laboratory results and chain-of-custody forms corresponding to these samples are provided in Appendix 3. Table 1 includes the results in micrograms of lead per square foot (µg/ft2).

Table 1: Wipe sample results, September 2, 2008

Sample Number	Location	Description	Area (ft2)	Results (µg/ft2)
BGN-01	Assembly Hall	Table top	0.108	< 110
BGN-02	Assembly Hall	Baseboard heater	0.108	160
BGN-03	Kitchen	Pantry countertop	0.108	< 110
BGN-04	Kitchen	Table in mess hall	0.108	< 110
BGN-05	Converted IFR	Desk top	0.108	< 110
BGN-06	Converted IFR	Old supply air grill	0.108	99,000
BGN-07	Employee break room	Table w/microwave	0.108	260
BGN-08	Mess supply room	Shelf	0.108	1,200
BGN-09	Room 102 Classroom	File cabinet	0.108	150
BGN-10	Room 108 Computer room	Window sill	0.108	1,100
BGN-11	2nd floor mail room	Table top	0.108	< 110
BGN-12	2nd floor S1 Office – Capt Eric Stevens	Shelf	0.108	< 110
BGN-13	Room 201 – Conference room	Window mounted A/C	0.108	< 110
BGN-14	Room 217 – Instructor	Top of shelving	0.108	< 110
BGN-15	Room 211	Window sill	0.108	410
BGN-16	Room 213 – HSC	Top of white board	0.108	200
BGN-17	1st floor – Hall outside NCO office	Floor	0.108	< 110
BGN-18	Basement – locker room	Floor	0.108	260
BGN-19	Generator room	Top of electrical panel	0.108	7,700
BGN-20	Boiler room	Compressor	0.108	< 110
BGN-21	FMS-13 – Drill hall locker room	Table top	0.108	310
BGN-22	FMS-13 Drill hall	Floor in doorway	0.108	< 110
BGN-23	FMS-13 Drill hall	Desktop	0.108	< 110
BGN-24	FMS-13 Break room	Floor	0.108	< 110

There was no lead detected on the field blank

The results indicate that lead remains on surfaces within the old indoor firing range, which has been converted to a locker room. In addition, surface lead was identified in the assembly hall, employee break room, mess supply, classroom 102, computer room, room 211, 213, generator room, and in the locker room for FMS-13.

Personal Air Sample Results

The personal breathing zone samples were collected and analyzed in accordance with OSHA Method ID-125G. The samples were analyzed for lead by AMA Analytical Services, Inc. in Lanham, Maryland. AMA is accredited by the American Industrial Hygiene Association.

The air samples were collected using a SKC AirChek® sampling pump. Pre- and post-calibration of air flow rates were measured and recorded for the sample using the BIOS DryCal Model DC-I. The sample was collected by sampling air in the employee's breathing zone, or the hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches from the inhalation area.

Two members of the National Guard wore air monitors during normal operations. Mr. Non-Responsive and Mr. Non-Responsive performed day-to-day administrative operations throughout the monitoring period. The samples were analyzed for lead. The field notes and analytical laboratory results and chain-of-custody forms corresponding to these samples are provided in Appendix 3. Table 2 includes the results and a comparison to the respective PEL.

Table 2: Personal Breathing Zone Sample Results, September 2, 2008

Sample Number	Employee	Concentration	OSHA Action Level	OSHA PEL	Exceed PEL or TLV? (Yes / No)
BGN-A1	Non-Responsive	< 3.0 µg/m3	30 µg/m3	50 µg/m3	No
BGN-A2	Non-Responsive	< 3.0 µg/m3	30 µg/m3	50 µg/m3	No

There was no lead detected on the field blank

The results of the area air samples indicated that no detectable airborne concentrations of lead was present on the day of EORM's site visit

Facility Inspection and Employee Concerns

The Binghamton Readiness Center is home to the 204th Engineer Combat Battalion. The facility has two drill halls, one of which is used by FMS-13 for vehicle maintenance. In general the Readiness Center was in good condition with no peeling paint, water stains, or stained ceiling tiles. The only confirmed asbestos containing materials were floor tiles, which were undamaged. The pipe insulation was intact.

The main hallways, floors, and desktops were clean and dust free; however, a lot of dust was built up behind computers, on shelving, and on other hard to reach surfaces.

The former indoor firing range has been converted into a locker room. According to Mr. Jim Diffin, maintenance, the only remaining components of the firing range from approximately 14 years ago are the ventilation grates.

Several full-time employees of the National Guard were asked a series of questions related to the indoor air quality and office ergonomics of the facility. The employees reported the following:

- The building is generally dusty, leading to clogged filters in the window mounted air-conditioning units
- The vehicle exhaust from FMS-13 can be smelled on the second floor of the Readiness Center. One person reported their clothing smells like diesel fuel at the end of the day

- Several people reported that the window mounted air-conditioners do not sufficiently cool the space and that the air can get "stuffy" at times
- The employees reported having old computer monitors and insufficient adjustments to the office chairs

At the time of EORMs site visit, there was no detectable odor in the office areas of the building that were emanating from the garage.

Ventilation System Evaluation

The general heating, ventilating, and air-conditioning (HVAC) for the Binghamton Readiness Center is accomplished through a combination of baseboard heating and window mounted air-conditioning units. According to Non-Responsive the rooftop air handling unit has not worked for approximately 15 years.

Direct-reading measurements for temperature, relative humidity, and carbon dioxide (CO_2) were performed using a Q-Trak Plus Indoor Air Quality Monitor (Model #s 8551). This instrument detects CO_2 using a selective infrared absorption method and displays airborne concentrations in units of ppm. This instrument also measures temperature and relative humidity using electrical sensing methods. It displays temperature in degrees Fahrenheit and relative humidity in percent. The manufacturer's recommended yearly calibration was last performed in January 2008.

Table 3: Indoor door air quality measurements, September 2, 2008

Location	Number of Occupants	Temp (^{0}F)	RH (% RH)	CO_2 (ppm)
Foyer	0	77	53	442
FMS-13 Breakroom	2	75	55	435
Room 103 Recruiter	1	74	52	448
Superintendent's office	1	76	53	410
Room 213 HSC office	4	75	50	899
Room 221 S4 office	0	73	44	499
FMS-13 drill hall (maintenance shop)	6	75	57	338
Outdoors	---	82	56	341

The primary cursors for indoor thermal comfort are temperature and relative humidity. Air temperature is recommended to range from 73 to 79°F during summer and from 68 to 75°F during winter (ASHRAE 55-2004) for indoor office environments. This assumes that building occupants are dressed in normal garments and perform mainly sedentary activities. The results indicated that the indoor temperature ranged from 73 to 77°F, which was within the recommended ranges.

The relative humidity (RH) inside buildings should be maintained between 30 and 60% (ASHRAE – 62.1-2007). When the RH in indoor environments exceeds 60%, microbial growth may occur; whereas, relative humidity below 30% may cause the drying of mucous membranes and discomfort. The results indicated that the indoor relative humidity ranged from 44% to 57% indoors, which was within the recommended guideline

The ASHRAE Standard 62-2001, *Ventilation for Acceptable Indoor Air Quality*, has established a reference level based upon human comfort criteria of a maximum CO_2 concentration of 700 ppm above existing outdoor concentrations, below which is suggestive of an adequate quantity of outdoor air supply ventilation to the occupied space. The results indicated the indoor concentration of CO_2 ranged from 338 ppm to 899 pmm and the concurrent outdoor concentration was 341 ppm. This indicates there was sufficient outdoor air supply to the occupied space.

Lighting Survey

The lighting at the Binghamton Readiness Center consists of metal halide lamps, fluorescent lights, and incandescent lights. The metal halide lamps provide lighting for the Drill Hall, the fluorescent lights provide the lighting in the offices, and the incandescent lights are used in the restrooms and storage rooms. A lighting survey was conducted using a Cooke Corporation Cal-Light 400L, serial number 1C040084L. The Cal-Light was calibrated by the manufacturer.

The lighting measurements were compared to the Recommended Practice for Lighting Industrial Facilities RP-7-01 and for Office Building RP-1-04. Both RP-7 and RP-1 are approved by the American National Standards Institute (ANSI) and the Illuminating Engineering Society of North America (IESNA). Table 4 below, summarizes the results of the lighting survey.

Table 4: Lighting Survey Results, September 2, 2008

Location	Measurement (fc)	RP-7 Recommended Illuminance Values1 (fc)	Meets RP-7 Values? (Yes/No)	Comments
Foyer	12-30	10	Yes	
Hallway by NCO office	8-20	5	Yes	
Men's Room	10-12	7	Yes	
Room 103 (Recruiter)	19-28	50	No	
NCO Club	17-45	10	Yes	
Superintendent's office	10-25	50	No	
2nd floor hall by room 202	6-25	5	Yes	
Office 202	83-92	50	Yes	
Office 219	15-50	50	No	
Office 213 HSC	18-36	50	No	
Room 201 Conference room	25-50	30	Yes	
Room 221 S4 office	45-60	50	Yes	
Room 204 S3 office	27-60	50	No	
Men's room (officer's toilet)	3-17	7	Yes	

Location	Measurement (fc)	RP-7 Recommended Illuminance Values1 (fc)	Meets RP-7 Values? (Yes/No)	Comments
Room 208 Storage	4-5	10	No	
Office 212	10-26	50	No	
2nd floor mail/copy area	12-66	30	Yes	
Room 217 Instructor office	38-50	50	No	
Office 220	38-46	50	No	
Hallway outside CO office	2-28	5	Yes	
S1 Office	40-135	50	Yes	
XO office 226	40-65	50	Yes	Low near door only
Office 219	11-16	50	No	Several lights out
Basement hallway by room 26	3-30	5	Yes	
Employee break room	3-36	10	Yes	
Supply room hallway	1-16	5	Yes	
Mess supply	21-44	10	Yes	
Maintenance flammable storage	7-16	10	Yes	
Locker room (converted IFT)	6-35	7	Yes	
Mess hall	15-25	10	Yes	
Kitchen	40-66	30-50	Yes	
Pantry	43-55	10	Yes	
Boiler room	10-26	30	No	
FMS-13 Bay 1	8-17	75	No	
FMS-13 Bay 2	10-17	75	No	
FMS-13 Bay 3	7-10	75	No	
FMS-13 Bay 4	10-43	75	No	
FMS-13 Bay 5	19-22	75	No	
FMS-13 Bay 6	15-20	75	No	No vehicle in bay
FMS-13 Bay 7	7-12	75	No	
FMS-13 Bay 8	8-15	75	No	

Location	Measurement (fc)	RP-7 Recommended Illuminance Values1 (fc)	Meets RP-7 Values? (Yes/No)	Comments
FMS-13 Bay 9	10-15	75	No	
FMS-13 Bay 10	8-22	75	No	
FMS-13 Bay 11	13-25	75	No	
FMS-13 Bay 12	13-25	75	No	
FMS-13 Bay 13	14-55	75	No	
FMS-13 locker room by weapons locker	3-32	7	Yes	
FMS-13 Break room	15-61	10	Yes	
FMS-13 locker room	5-19	7	Yes	

fc = footcandles
[1] The recommended illuminance values were obtained from the ANSI/IESNA RP-1-04 (Office Lighting) and RP-7-01 (Industrial Lighting)

According to RP-1-04 and RP-7-01, the lighting survey results indicate insufficient lighting in several areas throughout the Binghamton Readiness Center. Specifically, the boiler room, recruiter's office, superintendent's office, office 219, office 213, office 204, storage room 208, office 212, office 217, office 219, and office 220 all had insufficient lighting throughout most of the space. In addition, all 13 vehicle maintenance bays in the Readiness Center owned portion of FMS-13 had insufficient lighting.

Evaluation of Attached Garage

Operational Description

The Binghamton Readiness Center has an attached garage operated by FMS-13. EORM conducted an industrial hygiene survey of FMS-13 in July 2007. The garage consists of 13 vehicle maintenance bays and has 14 vehicle exhaust vents. Following the July 2008 assessment EORM recommended the ventilation be increased to accommodate the Heavy Expanded Mobility Tactical Truck (HEMTT), which is the largest vehicle serviced. The improvements were not implemented at the time of this site visit.

Hazards Present and Controls

Based on the materials found in the garage there are several potential hazards associated with this garage. As with most of the field maintenance shops the use of pneumatic tools and other tools such as grinders can create hazardous noise.

Additional hazards that may be present include inhalation of vehicle exhaust, welding fumes, or chemicals used for degreasing.

Ventilation System Evaluation

There are two garages attached to the Binghamton Readiness Center, which are both operated by FMS-13. The larger of the two garages is depicted as a drill hall on the attached floor plan. FMS-13 leases this space from the Readiness Center. The garage has 13 vehicle maintenance bays and 14 vehicle exhaust vents. Photograph 3 of Appendix 2 shows a picture of the interior of FMS-13.

The exhaust system consists of a fan driven exhaust with a main metal duct through the facility. Fourteen (14) flexible pipes drop from the main duct branch extending to 14 maintenance bays. Maintenance Bay 1 does not have an exhaust vent. Exhaust Drop 10 is located near the large overhead door and is able to serve Work Bay 10 or the area near the large overhead door, if needed. The flexible pipes are 8-inch diameter flex hose, each approximately 20 feet long and have a 12-inch diameter cone hood to attach to the vehicle exhaust tailpipes for ventilation.

The ventilation survey was conducted using a VelociCalc Plus Model 8386. The ventilation survey measured the face velocity in feet per minute (fpm) of the flexible vehicle exhaust ducts. Table 4 summarizes the results of the survey. All measurements were taken with the vents fully open unless otherwise noted.

Table 4: Ventilation Exhaust Survey Results

Location	Average Face Velocity (fpm)	Calculated Measurement (cfm)
Bay 1	995	781
Bay 2	1210	950
Bay 3	Not in service	
Bay 4	880	691
Bay 5	1130	887
Bay 6	Vent attached to vehicle – could not take measurement	
Bay 7	1160	911
Bay 8	1180	927
Bay 9	Vent attached to vehicle – could not take measurement	
Bay 10	7551	593
Bay 11	1210	950
Bay 12	1250	982
Bay 13	1100	864
Bay 13	1180	927

cfm = cubic feet per minute

[1]exhaust vent will not openly fully. Measurement was taken with vent partially closed.

According to the American Conference of Governmental Industrial Hygienists (ACGIH) Industrial Ventilation Manual Figure VS-85-02, the exhaust ventilation volumes for operating engines connected directly to a tailpipe exhaust system are determined by the engine displacement, the engine RPM, and the tailpipe exhaust temperature, plus a 20% safety factor. The equation is:

$$Q_c = (1.2)(D_{eng} \times N)\ \frac{[460F + T_{eng}]}{530F}$$

Where: Q_c = Exhaust flow (acfm)

T_{eng} = Engine tailpipe temperature (F)
D_{eng} = Engine displacement (ft^3)
N = Engine revolutions per minute (rpm)

Reportedly, the HEMTT (Heavy Expanded Mobility Tactical Truck) Detroit 98 is the largest vehicle that is serviced at FMS #05. The HEMTT is a 12 liter, maximum 2,100 rpm, and engine exhaust temperature of 630 (F). The data collected from the manufacturer reveals the following required exhaust ventilation flow:

$$Q_c = (1.2)[12L \times \frac{0.0353\ ft^3}{L} \times 2100]\ \frac{[460F + 630]}{530F} = 2{,}195\ acfm$$

According to the ACGIH Figure VS-85-02, the required tailpipe exhaust flow at FMS-13 is 2,195 acfm (actual cubic feet per minute). On average, the vehicle tailpipe exhaust ventilation system at each maintenance bay did not meet the ACGIH requirement on the day of the survey.

Lighting

The light readings are provided in the lighting survey section above.

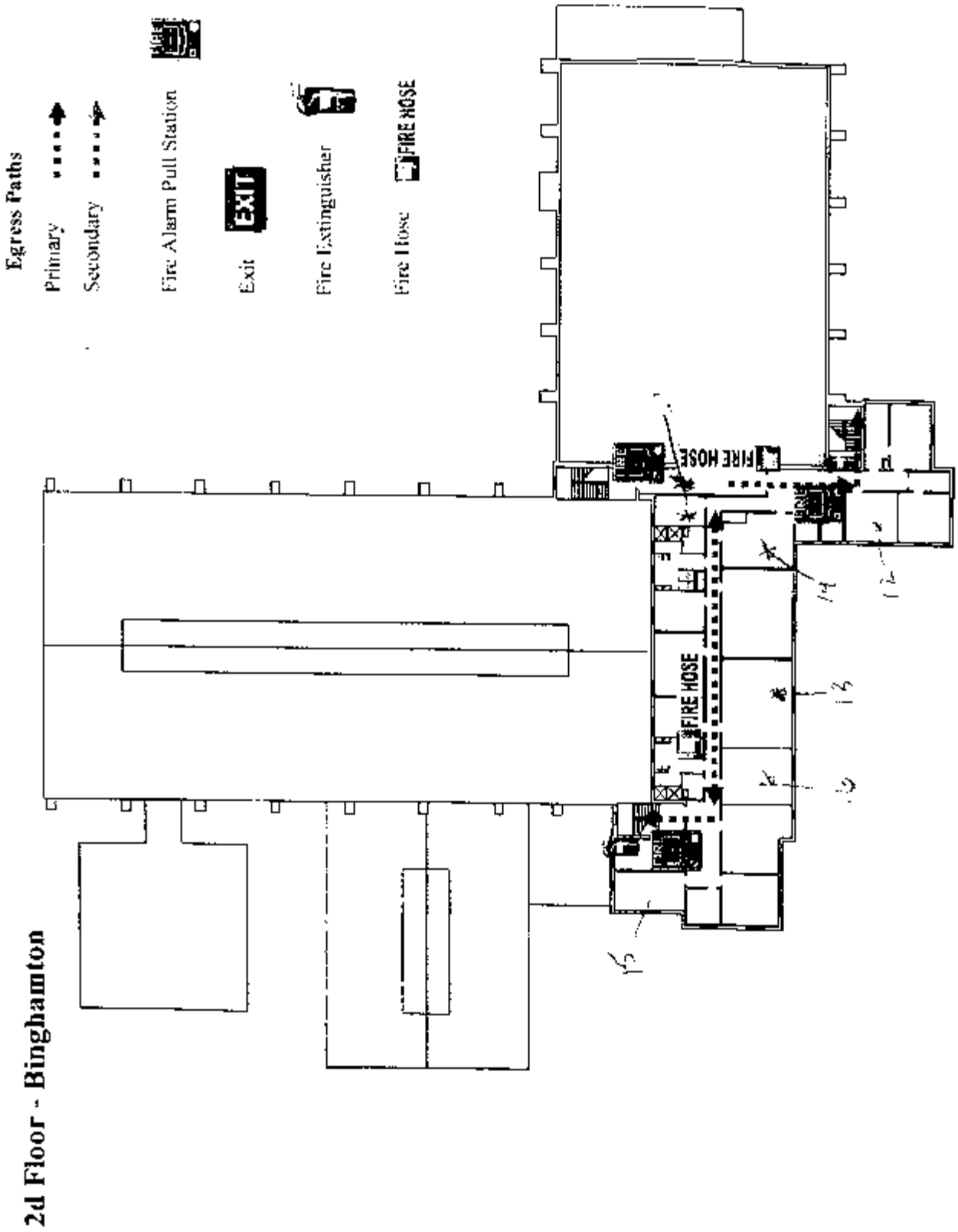
Conclusions and Recommendations

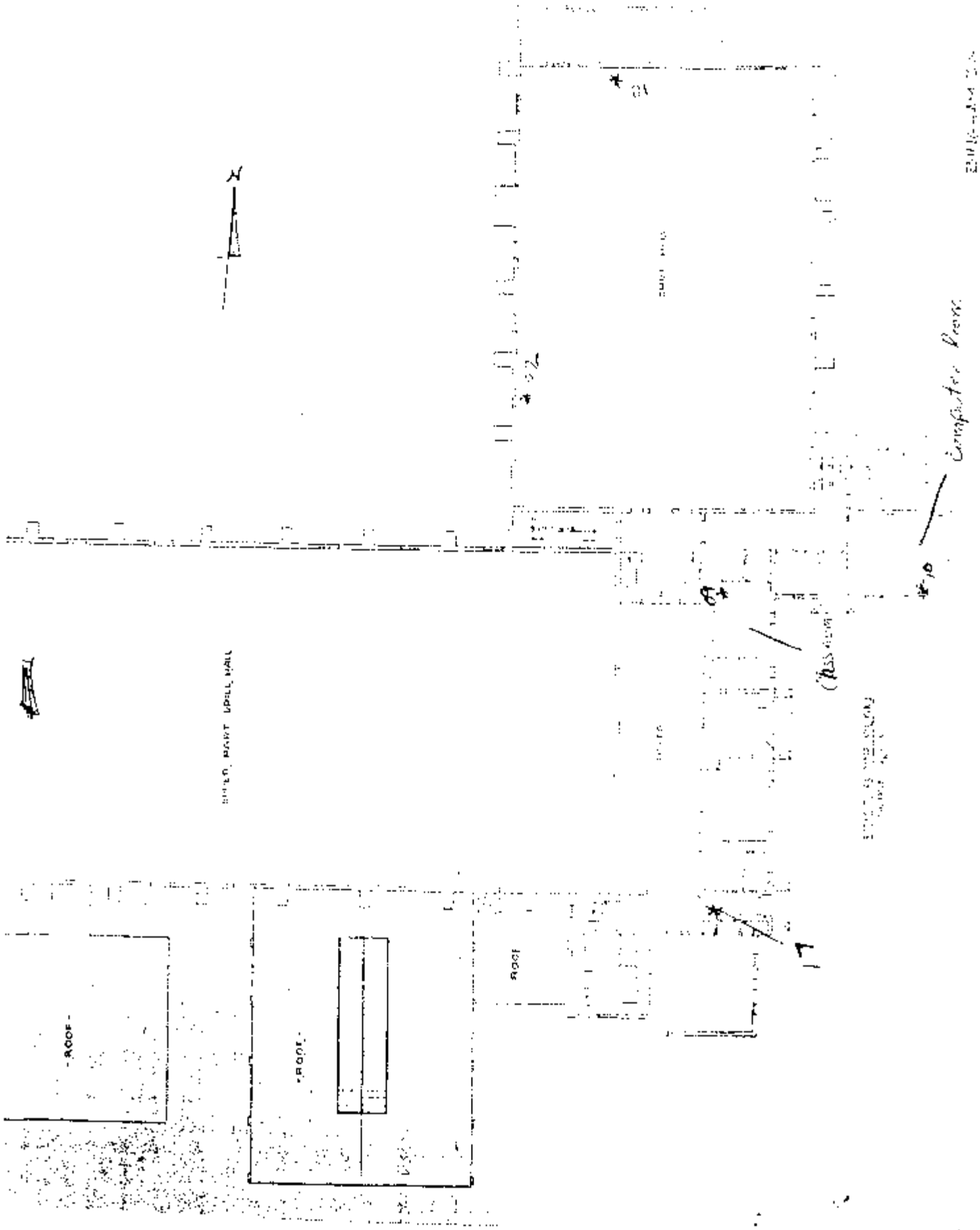
Based on the observations and results of the industrial hygiene survey, EORM has concluded the following:

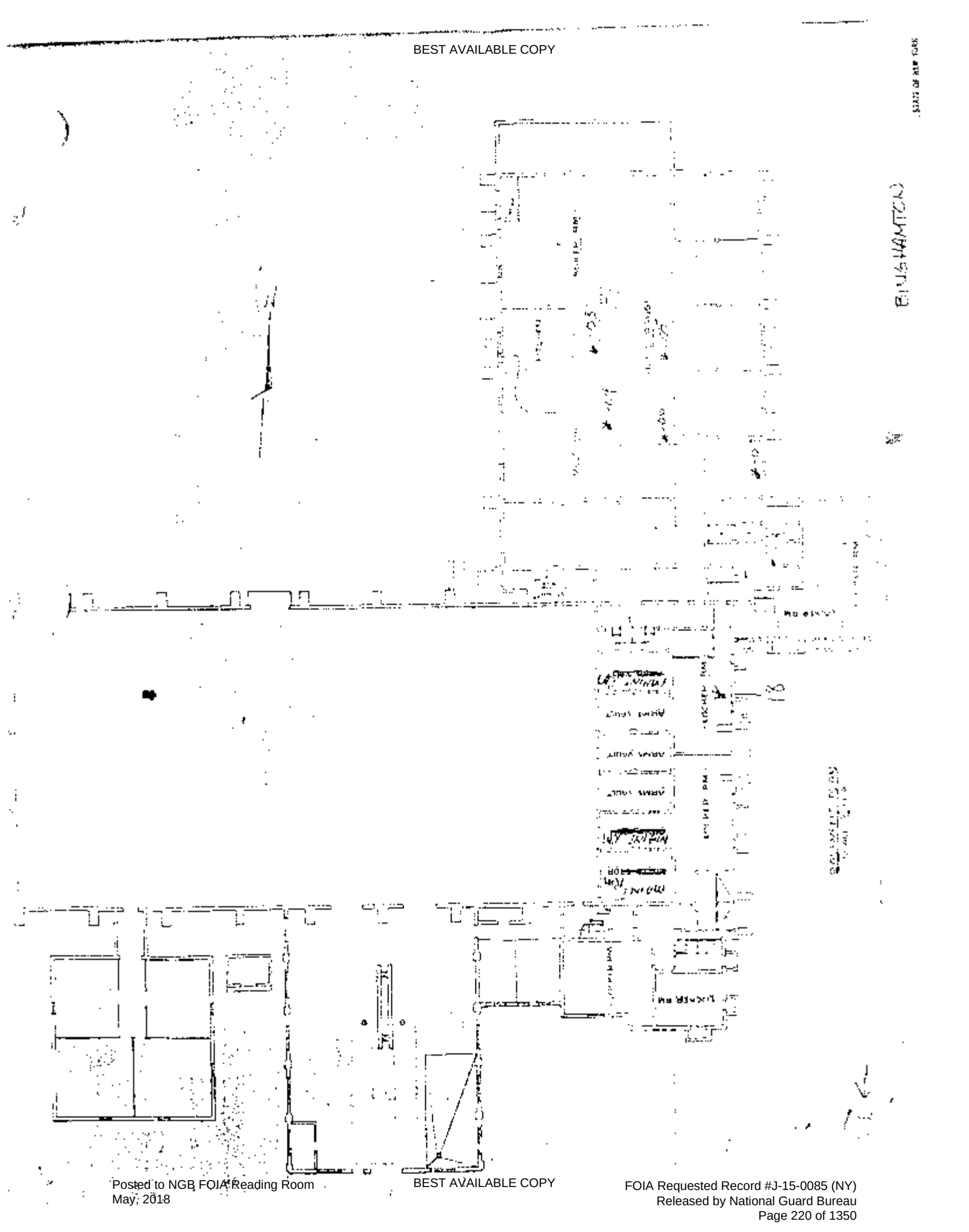
- The surface wipe samples for lead indicated that there is lead on the surfaces within the old indoor firing range, which has been converted to a locker room. In addition, surface lead was identified in the assembly hall, employee break room, mess supply, classroom 102, computer room, room 211, 213, generator room, and in the locker room for FMS-13. EORM recommends that the surfaces within these rooms be cleaned by a contractor specializing in lead decontamination.
- The personal air samples indicated that the surface lead was not airborne on the day of EORM's site visit. However, with the increased foot traffic that occurs during drill weekends the possibility exists that the surface lead may be disturbed during high occupancy. Therefore, all lead contaminated surfaces should be cleaned.
- The results of the CO2, temperature, and relative humidity direct reading measurements indicated that there is an adequate amount of outdoor air supplied to the occupied space of the Readiness Center. EORM does not recommend further action at this time.
- The lighting survey indicates that there is insufficient lighting in throughout the first and second floor of the Binghamton Readiness Center. EORM recommends that additional lighting be provided in these areas. There were several lights out in office 219. Fixing these lights may provide sufficient lighting. In addition, the survey indicated there is insufficient lighting in FMS-13 vehicle maintenance bays that are owned by the Readiness Center.
- The ventilation assessment of the vehicle exhaust vents in FMS-13 indicated inadequate capture velocity at all locations. EORM recommends that the ventilation at all maintenance bays be increased.

The results of this survey should be communicated to the participants as well as other people who perform similar job duties that did not participate.

Appendix 1 – Binghamton Readiness Center Floor Plan


Egress Paths
Primary
Secondary
Fire Alarm Pull Station
Exit
EXIT
Fire Extinguisher
Fire Hose
FIRE HOSE
FIRE HOSE
FIRE HOSE
2d Floor - Binghamton





Appendix 2 – Photographs

Photograph 1: Exterior of Readiness Center

Photograph 2: Drill Hall

Photograph 3: Drill hall (FMS-13)

Photograph 4: Converted indoor firing range

Photograph 5: Old air grate in locker room (former IFR)

Photograph 6: Flammable storage cabinet

Appendix 3 – Laboratory Analytical Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory-Binghamton	**Chain Of Custody:**	503199
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	85 West End Street, Binghamton, NY	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	NATL004	**Person Submitting:**	Non-Responsive
		P.O. Number:	Not Provided	**Date Analyzed:**	10/7/2008 **Report Date:** 10/7/2008

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0900934	BGN-01	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900935	BGN-02	Flame	Wipe	****	0.108	110	ug/ft²	160	ug/ft²	
0900936	BGN-03	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900937	BGN-04	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900938	BGN-05	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900939	BGN-06	Flame	Wipe	****	0.108	110	ug/ft²	99000	ug/ft²	
0900940	BGN-07	Flame	Wipe	****	0.108	110	ug/ft²	260	ug/ft²	
0900941	BGN-08	Flame	Wipe	****	0.108	110	ug/ft²	1200	ug/ft²	
0900942	BGN-09	Flame	Wipe	****	0.108	110	ug/ft²	150	ug/ft²	
0900943	BGN-10	Flame	Wipe	****	0.108	110	ug/ft²	1100	ug/ft²	
0900944	BGN-11	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900945	BGN-12	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900946	BGN-13	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900947	BGN-14	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900948	BGN-15	Flame	Wipe	****	0.108	110	ug/ft²	410	ug/ft²	
0900949	BGN-16	Flame	Wipe	****	0.108	110	ug/ft²	200	ug/ft²	
0900950	BGN-17	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900951	BGN-18	Flame	Wipe	****	0.108	110	ug/ft²	260	ug/ft²	
0900952	BGN-19	Flame	Wipe	****	0.108	110	ug/ft²	7700	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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NY ELAP
10920

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Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	85 West End Street, Binghamton, NY	**Date Submitted:**	10/3/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	NATL004	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	10/7/2008	**Report Date:**	10/7/2008

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result			Comments
0900953	BGN-20	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²	
0900954	BGN-21	Flame	Wipe	****	0.108	110	ug/ft²		310	ug/ft²	
0900955	BGN-22	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²	
0900956	BGN-23	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²	
0900957	BGN-24	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²	
0900958	BGN-FB	Flame	Wipe Blank	****	N/A	12	ug	<	12	ug	
0900959	BGN-A1	Flame	Air	0	N/A	3	ug/m³	<	3	ug	
0900960	BGN-A2	Flame	Air	0	N/A	3	ug/m³	<	3	ug	
0900961	BGN-AFB	Flame	Air Blank	0	N/A	3	ug/m³	<	3	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.

NY ELAP accredidation applies only to paint chip, wipe, and water samples.

Analyst: Non-Responsive

Technical Manager: Non-Responsive

OWI (410) 247-2024

127511 **503199**

p. 1

AMA Analytical Services, Inc.
Focused on Results
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: NGB-IHNE
3. Address 2: 301-14 OLD Bay Lane
4. Address 3: HAVRE DE GRACE, MD 21078
5. Phone #: 410.942.0273 Fax #:

Submittal Information:
1. Job Name: National Guard Armory - Binghamton
2. Job Location: 85 West End Street, Binghamton, NY
3. Job #: NATL 2008 P.O. #:
4. Contact Person: [redacted] @ 8579263341
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
- ☐ Immediate Date Due:
- ☐ 24 Hours Time Due:
- Comments:

NORMAL BUSINESS HOURS
- ☐ Immediate
- ☐ Next Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ 5 Day +
- Date Due:
- ☐ Results Required By Noon (Every Attempt Will Be Made to Accomodate)

REPORT TO:
- ☑ Include [redacted] with Report
- ☑ Email: [redacted] @eom.com
- ☐ Fax:
- ☐ Verbals:

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity____ in a 25mm 37mm
- ☐ NIOSH 7400 ____(QTY)
- ☐ Fiberglass ____(QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity____ in a 25mm 37mm
- ☐ AHERA ____(QTY)
- ☐ NIOSH 7402 ____(QTY)
- ☐ Other (specify____) ____(QTY)

PLM Bulk
- ☐ EPA 600 – Visual Estimate ____(QTY)
- ☐ EPA Point Count ____(QTY)
- ☐ NY State Friable 198.1 ____(QTY)
- ☐ Grav. Reduction ELAP 198.6 ____(QTY)
- ☐ Other (specify____) ____(QTY)

TEM Bulk
- ☐ ELAP 198.4/Chatfield ____(QTY)
- ☐ NY State PLM/TEM ____(QTY)
- ☐ Residual Ash ____(QTY)

TEM Dust
- ☐ Qual. (pres/abs) Vacuum/Dust ____(QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 ____(QTY)
- ☐ Quan. (s/area)Dust D6480-99 ____(QTY)

TEM Water
- ☐ Qual. (pres/abs) ____(QTY)
- ☐ ELAP 198.2/EPA 100.2 ____(QTY)
- ☐ EPA 100.1 ____(QTY)

☒ All samples received in good condition unless otherwise noted.
TEM Water samples ____°C)

Lead Analysis
- ☐ Paint Chip ____(QTY)
- ☒ Dust Wipe (wipe type Ghost) 25 (QTY)
- ☒ Air 3 (QTY)
- ☐ Soil/Solid ____(QTY)
- ☐ TCLP ____(QTY)
- ☐ Drinking Water ____(QTY)
- ☐ Waste Water ____(QTY)
- ☐ Dust Wipe Furnace (wipe type ____) ____(QTY)

Mold - Direct Microscopic Analysis
- ☐ Collection Apparatus for Spore Traps:
- ☐ Spore-Trap ____(QTY) ☐ Bulk ____(QTY)
- ☐ Surface Swab ____(QTY) ☐ Surface Vacuum Dust ____(QTY)
- ☐ Surface Tape ____(QTY) ☐ Other (Specify____) ____(QTY)

SAMPLE INFORMATION

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WATER AND OTHER	SPORE TRAP	TAPE	SWAB
	BGN-01	9/2		100cm²				X				X				
	BGN-02															
	BGN-03															
	BGN-04															
	BGN-05															
	BGN-06															
	BGN-07															
	BGN-08															
	BGN-09															
	BGN-10															
	BGN-11															
	BGN-12															

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: 10/6/08 Contact: MV By: MS
Client will calculate ug/sq results by himself. Report w/o L.
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 9 / 10 / 08 @ 1000 Via: Fed Ex By (Print): [redacted] Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time:
4. Comments:

OWI (410) 247-2024 127511 210 REV. 6.08

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 503199 P. 2

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: NGB-IHNE
3. Address 2: 301-14 OLD Bay Lane
4. Address 3: HAVRE DE GRACE, MD 21078
5. Phone #: 410.942.0273 Fax #:

Submittal Information:
1. Job Name: National Guard Armory - Binghamton
2. Job Location: 85 West End Street, Binghamton, NY
3. Job #: NOT [illegible] P.O. #:
4. Contact Person: Non-Responsive @ [illegible]3341
5. Submitted by: Non-Responsive Signature:

Reporting Information (Results will be provided [illegible]):

AFTER HOURS (must be pre-scheduled)
- ☐ Immediate Date Due:
- ☐ 24 Hours Time Due:
- Comments:

NORMAL BUSINESS HOURS
- ☐ Immediate ☐ 3 Day
- ☐ Next Day ☒ 5 Day +
- ☐ 2 Day Date Due:
- ☐ Results Required By Noon (Every Attempt Will Be Made to Accommodate)

REPORT TO:
- ☒ Include Non-Responsive th Report
- ☒ Email: [redacted] eo-m. com
- ☐ Fax:
- ☐ Verbals:

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity____ in a 25mm 37mm
- ☐ NIOSH 7400____(QTY)
- ☐ Fiberglass____(QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity____ in a 25mm 37mm
- ☐ AHERA____(QTY)
- ☐ NIOSH 7402____(QTY)
- ☐ Other (specify____)____(QTY)

PLM Bulk
- ☐ EPA 600 – Visual Estimate____(QTY)
- ☐ EPA Point Count____(QTY)
- ☐ NY State Friable 198.1____(QTY)
- ☐ Grav. Reduction ELAP 198.6____(QTY)
- ☐ Other (specify____)____(QTY)

TEM Bulk
- ☐ ELAP 198.4/Chatfield____(QTY)
- ☐ NY State PLM/TEM____(QTY)
- ☐ Residual Ash____(QTY)

TEM Dust
- ☐ Qual. (pres/abs) Vacuum/Dust:____(QTY)
- ☐ Quan. (s/area) Vacuum D5755-95____(QTY)
- ☐ Quan. (s/area)Dust D6480-99____(QTY)

TEM Water
- ☐ Qual. (pres/abs)____(QTY)
- ☐ ELAP 198.2/EPA 100.2____(QTY)
- ☐ EPA 100.1____(QTY)

☐ All samples received in good condition unless otherwise noted. (TEM Water samples____°C)

Lead Analysis
- ☐ Paint Chip____(QTY)
- ☒ Dust Wipe (wipe type Ghost) 35 (QTY)
- ☒ Air 3 (QTY)
- ☐ Soil/Solid____(QTY)
- ☐ TCLP____(QTY)
- ☐ Drinking Water____(QTY)
- ☐ Waste Water____(QTY)
- ☐ Dust Wipe Furnace (wipe type____)____(QTY)

Mold - Direct Microscopic Analysis
- ☐ Collection Apparatus for Spore Traps:____
- ☐ Spore-Trap____(QTY) ☐ Bulk____(QTY)
- ☐ Surface Swab____(QTY) ☐ Surface Vacuum Dust____(QTY)
- ☐ Surface Tape____(QTY) ☐ Other (Specify____)____(QTY)

SAMPLE INFORMATION / **ANALYSIS** / **MATRIX**

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	PAINT CHIP	SOIL	SPORE TRAP	TAPE	SWAB
BGN-	BGN-13	9/2		100 cm²				X				X					
	BGN-14	"		"				"				"					
	BGN-15	"		"				"				"					
	BGN-16	"		"				"				"					
	BGN-17	"		"				"				"					
	BGN-18	"		"				"				"					
	BGN-19	"		"				"				"					
	BGN-20	"		"				"				"					
	BGN-21	"		"				"				"					
	BGN-22	"		"				"				"					
	BGN-23	"		"				"				"					
	BGN-24	"		"				"				"					

CLIENT CONTACT
(LABORATORY STAFF ONLY)

Date/Time:	Contact:	By:
Date/Time:	Contact:	By:
Date/Time:	Contact:	By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ___/___/___ @ ___ Via: ___ By (Print): ___ Sign: ___
2. Date/Time Analyzed: ___/___/___ @ ___ By (Print) ___ Sign: ___
3. Results Reported To: ___ Via: ___ Date: ___/___/___ Time: ___ Initials: ___
4. Comments: ___

210 REV. 6.08

AMA Analytical Services, Inc.
Focused on Results

AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 503199 P. 3

Mailing/Billing Information:
1. Client Name: See p. 1
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: Fax #:

Submittal Information:
1. Job Name: See p. 1
2. Job Location:
3. Job #: P.O. #:
4. Contact Person: @ phone #
5. Submitted by: Signature:

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
- ☐ Immediate Date Due:
- ☐ 24 Hours Time Due:
- Comments:

NORMAL BUSINESS HOURS
- ☐ Immediate ☐ 3 Day
- ☐ Next Day ☐ 5 Day +
- ☐ 2 Day Date Due:
- ☐ Results Required By Noon (Every Attempt Will Be Made to Accommodate)

REPORT TO:
- ☐ Include COC/Field Data Sheets with Report
- ☐ Email: @
- ☐ Fax:
- ☐ Verbal:

Asbestos Analysis

PCM Air – Please Indicate Filter Type
PC MCE Porosity ____ in a 25mm 37mm
- ☐ NIOSH 7400 ____ (QTY)
- ☐ Fiberglass ____ (QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
- ☐ AHERA ____ (QTY)
- ☐ NIOSH 7402 ____ (QTY)
- ☐ Other (specify) ____ (QTY)

PLM Bulk
- ☐ EPA 600 - Visual Estimate ____ (QTY)
- ☐ EPA Point Count ____ (QTY)
- ☐ NY State Friable 198.1 ____ (QTY)
- ☐ Grav. Reduction ELAP 198.6 ____ (QTY)
- ☐ Other (specify) ____ (QTY)

TEM Bulk
- ☐ ELAP 198.4/Chatfield ____ (QTY)
- ☐ NY State PLM/TEM ____ (QTY)
- ☐ Residual Ash ____ (QTY)

TEM Dust
- ☐ Qual. (presabs) Vacuum/Dust ____ (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
- ☐ Quan. (s/area)Dust D6480-99 ____ (QTY)

TEM Water
- ☐ Qual. (presabs) ____ (QTY)
- ☐ ELAP 198.2/EPA 100.2 ____ (QTY)
- ☐ EPA 100.1 ____ (QTY)

☐ All samples received in good condition unless otherwise noted.
(TEM Water samples ____ °C)

Lead Analysis
- ☐ Paint Chip ____ (QTY)
- ☒ Dust Wipe (wipe type Ghost) 25 (QTY)
- ☒ Air 3 (QTY)
- ☐ Soil/Solid ____ (QTY)
- ☐ TCLP ____ (QTY)
- ☐ Drinking Water ____ (QTY)
- ☐ Waste Water ____ (QTY)
- ☐ Dust Wipe Furnace (wipe type ____) ____ (QTY)

Mold - Direct Microscopic Analysis
- ☐ Collection Apparatus for Spore Traps:
- ☐ Spore-Trap ____ (QTY) ☐ Bulk ____ (QTY)
- ☐ Surface Swab ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
- ☐ Surface Tape ____ (QTY) ☐ Other (Specify) ____ (QTY)

SAMPLE INFORMATION

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	PCM	TEM	PLM	LEAD	MOLD	AIR	BULK	DUST			TAPE	SWAB
	BGN - FB	9/2		—				X				X				
	BGN - A1							↓		↓						
	BGN - A2							↓		↓						
	BGN AFB			—				↓		↓						

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact By:
Date/Time: Contact By:
Date/Time: Contact By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: / / @ Via: By (Print) Sign:
2. Date/Time Analyzed: / / @ By (Print) Sign:
3. Results Reported To: Via: Date: / / Time:
Comments:

Appendix 4 – References

American Conference of Governmental Industrial Hygienists (ACGIH). 2007. *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*.

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62.1-2007, Ventilation for Acceptable Indoor Air Quality.

Code of Federal Regulations (CFR) 29 Part 1910.1000 Air Contaminants.

DODI 6055.1, DOD SO4 Program, 19 August 1998.

RP-1-2004, Office Lighting, ANSI/IESNA

RP-7-2001, Industrial Lighting, ANSI/IESNA, change 20 July 2004.

UFC 3-410-01FA, Unified Facilities Criteria (UFC) for Heating, Ventilating, and Air Conditioning, Department of Defense, 15 May 2003.

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Binghamton Readiness Center
Binghamton, NY 13905-3855

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 30, 2013

Bonus Environmental, LLC

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APPENDICES

January 30, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Binghamton Readiness Center, Binghamton, NY 13905-3855

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Binghamton Readiness Center located at 85 West End Avenue in Binghamton, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 16, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Binghamton Readiness Center was constructed in 1933, and is an Army National Guard armory comprised of offices, locker rooms, storage rooms, a conference room, a drill hall, a kitchen, a boiler room, a break room, a dining hall, a fitness room, classrooms, and a former indoor firing range. Field Maintenance Shop (FMS) 13 is attached to the Binghamton Readiness Center. The point of contact for the approximately 32,080 ft² Binghamton Readiness Center is Mr. Non-Responsive. One (1) full-time administrative person is employed at the Binghamton Readiness Center. Health and Safety programs reviewed during this survey included personal protective equipment (PPE), Lock-Out/Tag-Out, Asbestos Awareness, Fire Safety, Confined Spaces, Respiratory protection, and Hazcom. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial

hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Nineteen (19) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Binghamton Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
Binghampton RC-LW-1	11-16-12	Field Blank	---	< 12 μg
Binghampton RC-LW-2	11-16-12	Drill hall, southeast corner, top of circuit breaker box	0.111	1,700
Binghampton RC-LW-3	11-16-12	Drill hall, northeast corner, on heat register	0.111	630
Binghampton RC-LW-4	11-16-12	Drill hall, northwest corner, on window sill	0.111	1,900
Binghampton RC-LW-5	11-16-12	Drill hall, southwest corner, on brown metal housing	0.111	2,100
Binghampton RC-LW-6	11-16-12	Drill hall, center, on floor	0.111	< 110
Binghampton RC-LW-7	11-16-12	Kitchen, northwest corner, top of Garland oven	0.111	< 110
Binghampton RC-LW-8	11-16-12	Dining hall, west side, top of light fixture	0.111	< 110
Binghampton RC-LW-9	11-16-12	Room 46 (former indoor firing range), center of room, on floor	0.111	630
Binghampton RC-LW-10	11-16-12	Room 46 (former indoor firing range), south end, on ceiling heater	0.111	3,100

Army National Guard – Binghamton Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
Binghampton RC-LW-11	11-16-12	Fitness room, southeast corner, on window sill	0.111	7,600
Binghampton RC-LW-12	11-16-12	Locker room 15, southeast corner, on ceiling heater	0.111	3,500
Binghampton RC-LW-13	11-16-12	Classroom 108, top of "Smartboard"	0.111	220
Binghampton RC-LW-14	11-16-12	Classroom 102, south end, top of exit sign	0.111	270
Binghampton RC-LW-15	11-16-12	Main hallway, center, top of display case	0.111	< 110
Binghampton RC-LW-16	11-16-12	Break room 107, southeast corner, on television table	0.111	1,200
Binghampton RC-LW-17	11-16-12	Copy area, top of copy machine	0.111	420
Binghampton RC-LW-18	11-16-12	Conference room, top of file cabinet	0.111	220
Binghampton RC-LW-19	11-16-12	2nd floor hallway, top of emergency lighting	0.111	320
Binghampton RC-LW-20	11-16-12	Office 226, northeast corner, on heat register	0.111	220

Surface cleanliness threshold = < 200 micrograms per square foot ($\mu g/ft^2$)

The former indoor firing range is currently used as storage. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Binghamton Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified one area of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling paint in the following area:

- Approximately 12 ft^2 of peeling brown paint in room 14 (shower)

One (1) paint chip samples was collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. See table below for sample information:

Army National Guard – Binghamton Readiness Center Paint Chip Sample				
Sample #	*Sample Location*	*Color*	*Analytical Reporting Limit (%)*	*Analytical Results (%)*
BinghamptonRC-PC-1	Room 14 (shower)	Brown	0.0083	0.031

Analysis indicated that the peeling paint collected contained detectable levels of lead. The paint is therefore considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Binghamton Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM's that were considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Binghamton Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified water-damaged materials in the following locations:

- Approximately 90 ft^2 of water-damaged brick wall in the Dining hall;
- Approximately 120 ft^2 of water-damaged brick wall in the Drill hall.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Binghamton Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Binghamton Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Binghamton Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Binghamton Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2)

throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 433 ppm to 519 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation all indicated 0.0 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Binghamton Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 64.8ºF to 71.1ºF and are not considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Binghamton Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 26.4% to 38.3%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Binghamton Readiness Center *Indoor Air Quality Measurements*				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, east side of building (mostly cloudy)	433	0.0	37.5	39.1
Fitness room	484	0.0	38.3	**64.8**
Dining hall	451	0.0	30.4	67.1
Boiler room	454	0.0	26.4	69.3
Locker room 15	519	0.0	32.6	69.3
Drill hall	461	0.0	30.2	70.5
Classroom 102	487	0.0	28.9	70.5
Break room 107	491	0.0	28.1	70.3
Copy area	477	0.0	28.0	70.3
2nd floor hallway	472	0.0	28.4	71.1
Office 226	494	0.0	29.8	70.2

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Binghamton Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Binghamton Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Fitness room	33.2	30	Yes
Room 6	Inaccessible		
Basement, men's restroom	52.6	5	Yes
Locker room 12	13.7	7	Yes
Room 14 (shower)	12.2	7	Yes
Room 30 (elec room)	Inaccessible		
Room 34	Inaccessible		
Supply storage	7.8	30	No
Room 46 (storage/former indoor firing range)	27.7	30	No
Dining hall	68.1	10	Yes
Kitchen	35.2	50	No
Pantry	Inaccessible		
Boiler room	20.9	30	No
Room 32 (storage)	24.4	30	No
Room 28 (storage)	6.5	30	No
Supply vault	Inaccessible		
Basement hallway	45.4	5	Yes
Locker room 15	34.3	7	Yes
1st floor, men's restroom	47.3	5	Yes

Army National Guard – Binghamton Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Break room 107	50.9	10	Yes
Foyer	8.5	10	No
1st floor, main hallway	38.6	5	Yes
Room 105 (office)	22.4	50	No
Room 103 (office)	31.2	50	No
Foyer	28.3	10	Yes
Superintendent's office	89.1	50	Yes
Classroom 102	105.1	30	Yes
FRG office	28.5	50	No
Classroom 108	76.4	30	Yes
Women's restroom	59.5	5	Yes
Drill hall	33.3	30	Yes
2nd floor hallway	48.3	5	Yes
Room 217	Inaccessible		
Room 212	Inaccessible		
Room 206 (men's restroom)	41.7	5	Yes
Vault	Inaccessible		
Room 204	Inaccessible		
Room 221 (office)	50.5	50	Yes
NY Guard office	13.1	50	No
Engineering office	Inaccessible		
Conference room	16.1	30	No
Women's restroom	21.7	5	Yes
Women's shower	29.1	7	Yes
Room 209	Inaccessible		
Copy area	34.1	10	Yes
Room 213	Inaccessible		
Room 215 (office)	93.7	50	Yes
Room 211	Inaccessible		
Room 202 (office)	191.7	50	Yes
Room 219	Inaccessible		
Room 218	Inaccessible		
Room 220	Inaccessible		
Room S-3	Inaccessible		
Room 230	Inaccessible		
Room 226 (office)	127.4	50	Yes
Room 222 (storage)	12.2	30	No
Stairwell	11.7	5	Yes

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out

lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Binghamton Readiness Center located at 85 West End Avenue in Binghamton, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 16, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Binghamton Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the majority of the tested areas;

2. Bonus Environmental, LLC identified one area of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified approximately 90 ft² of water damaged brick in the Dining hall, and approximately 120 ft² of water damaged brick in the Drill hall.

5. Bonus Environmental, LLC found the housekeeping practices within Binghamton Readiness Center in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Binghamton Readiness Center. All were found to be within their acceptable ranges/limits; with the exception of one temperature reading.

8. Areas within the Binghamton Readiness Center facility were identified as improperly illuminated.

9. Health and Safety policies reviewed at the Binghamton Readiness Center included Personal Protective Equipment (PPE), Lock-Out/Tag-Out, Asbestos Awareness, Fire Safety, Confined Spaces, Respiratory Protection, and Hazcom. All were found to meet regulatory requirements.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar

circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

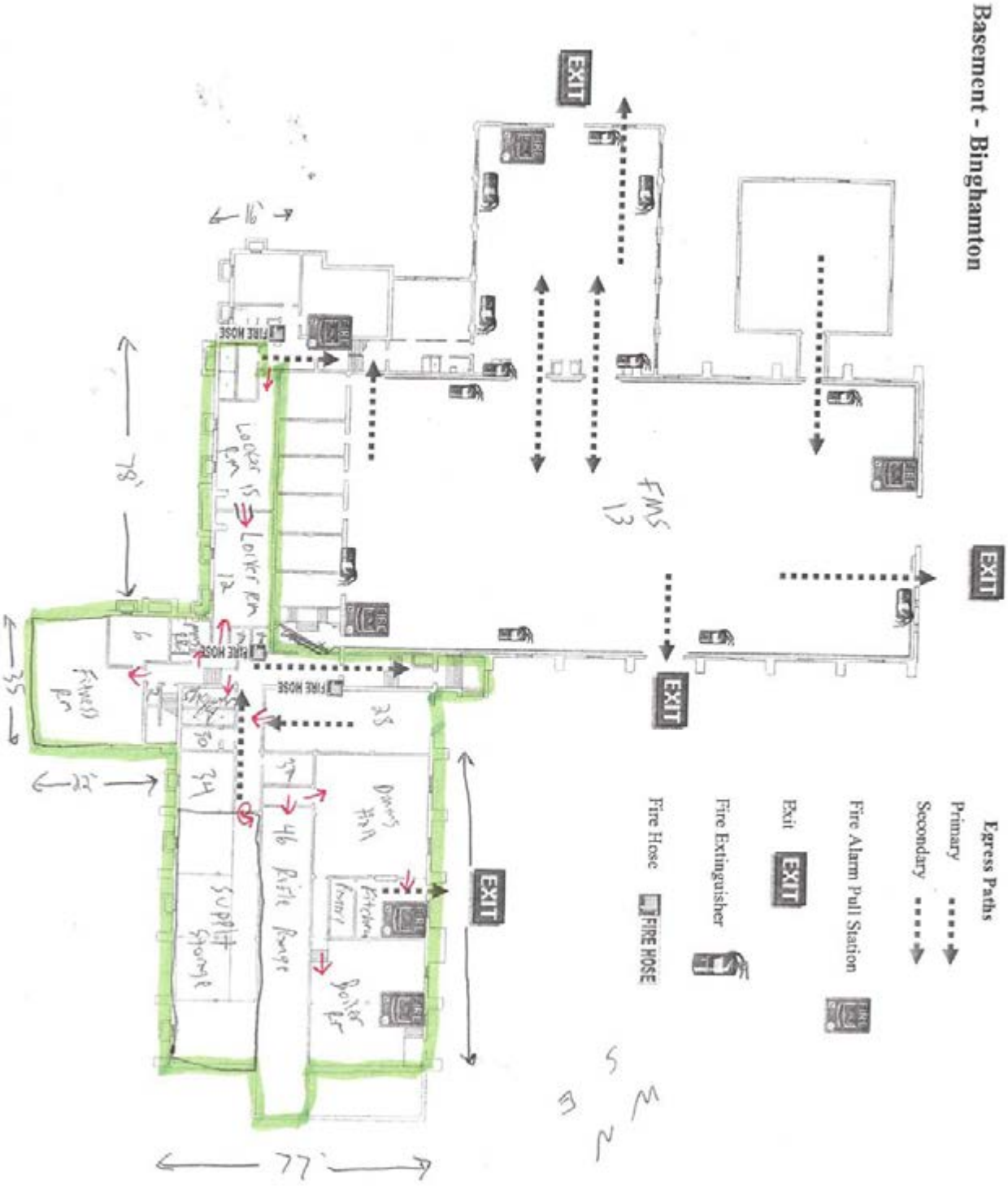
Non-Responsive

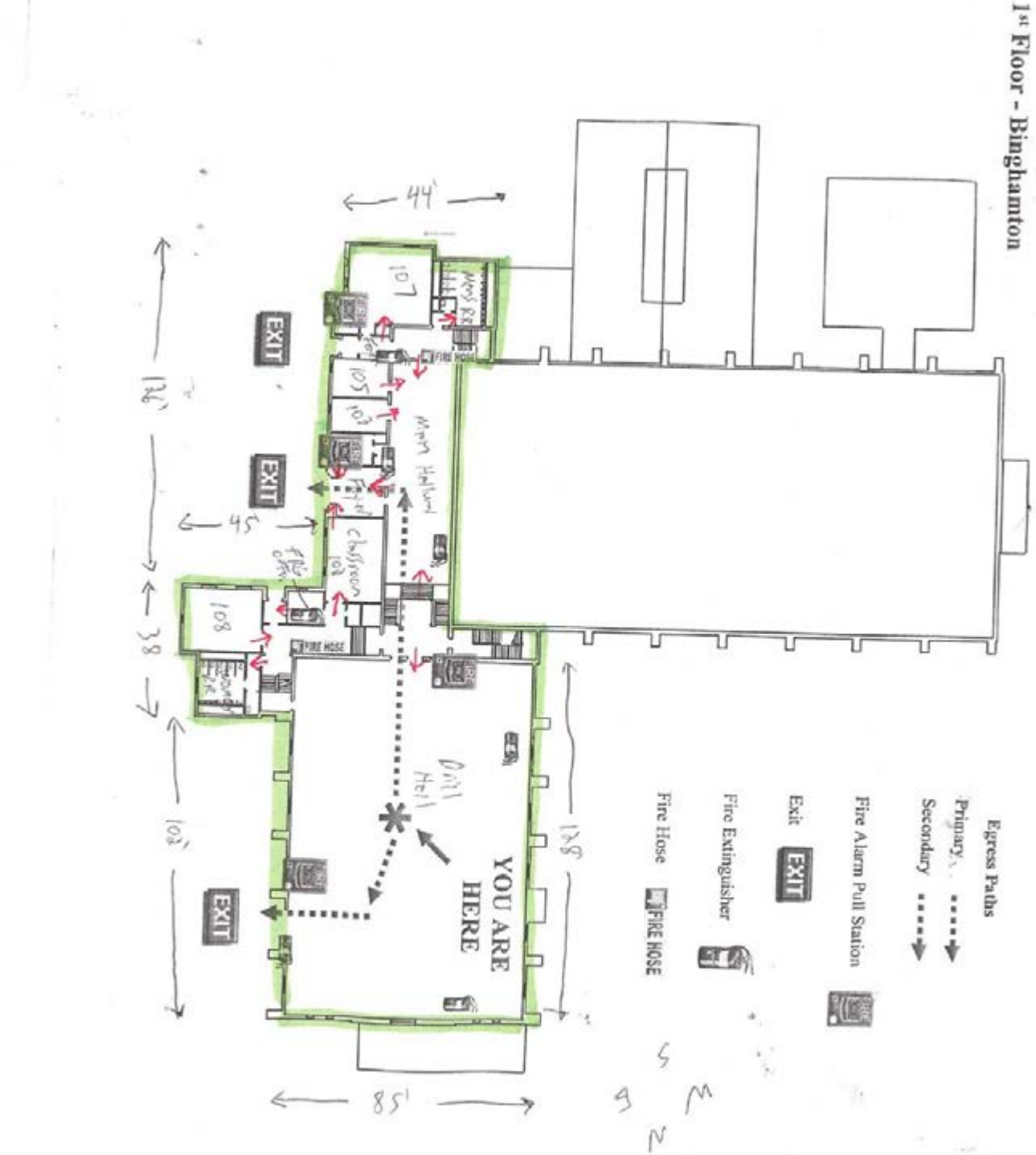
Principal
Bonus Environmental, LLC

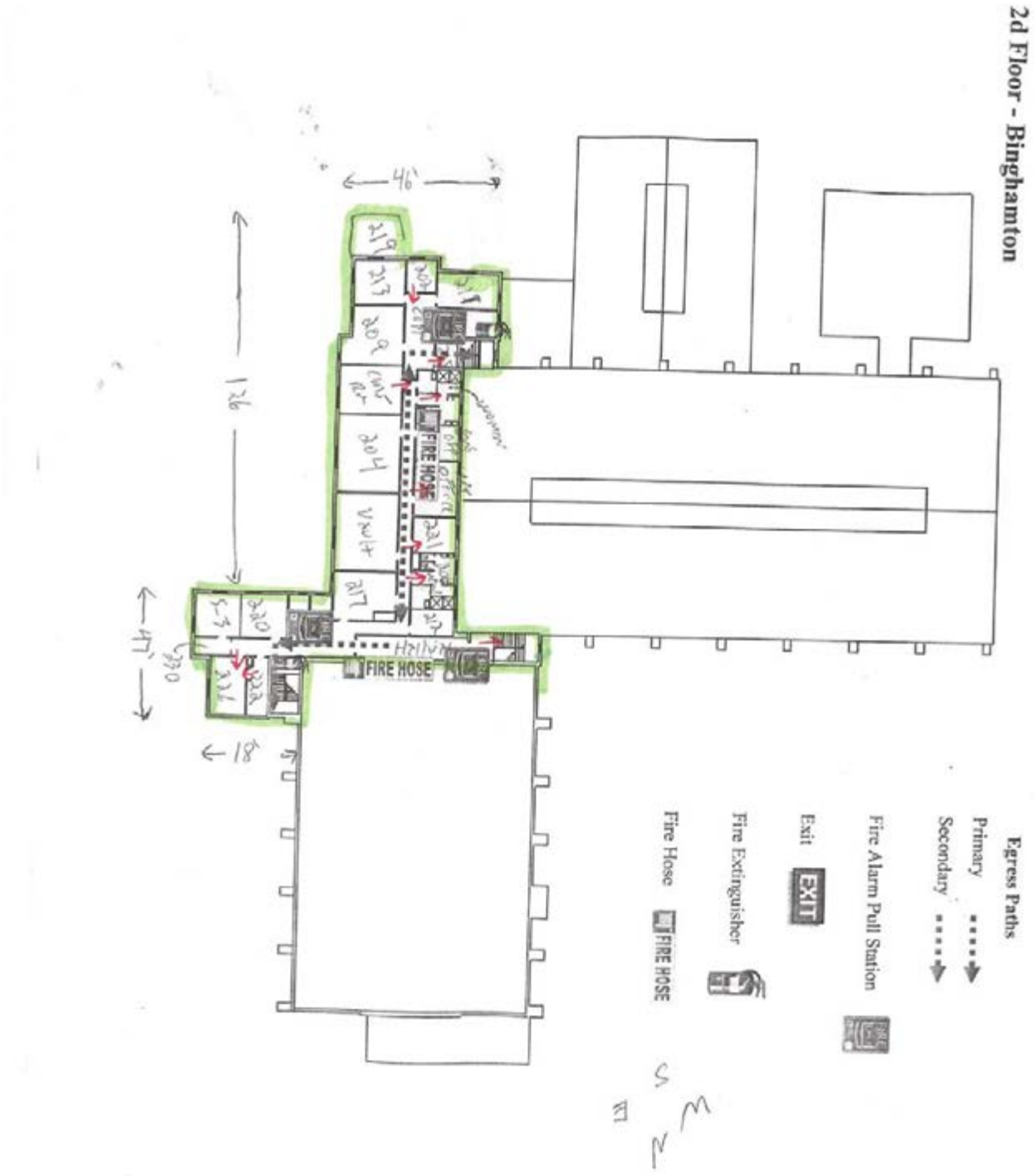
BEST AVAILABLE COPY

Appendix A

Shop Diagram and Air Flow Patterns






2d Floor - Binghamton
46'
126'
47'
18'
FIRE HOSE
FIRE HOSE
Egress Paths
Primary
Secondary
Fire Alarm Pull Station
Exit
EXIT
Fire Extinguisher
Fire Hose
FIRE HOSE

Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Binghamton RC	**Chain Of Custody:**	514540
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-F, State Military Reservation	**Job Location:**	Binghamton, NY	**Date Submitted:**	11/21/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/29/2012 **Report Date:** 11/29/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016347	BinghamptonRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13016348	BinghamptonRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	180	1700	ug/ft²	
13016349	BinghamptonRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	70	630	ug/ft²	
13016350	BinghamptonRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	210	1900	ug/ft²	
13016351	BinghamptonRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	230	2100	ug/ft²	
13016352	BinghamptonRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016353	BinghamptonRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016354	BinghamptonRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016355	BinghamptonRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	70	630	ug/ft²	
13016356	BinghamptonRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	340	3100	ug/ft²	
13016357	BinghamptonRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	850	7600	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.

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AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Binghamton RC	Chain Of Custody:	514540
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Binghamton, NY	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/29/2012 Report Date: 11/29/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016358	BinghamptonRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	390	3500	ug/ft²	
13016359	BinghamptonRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	25	220	ug/ft²	
13016360	BinghamptonRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	30	270	ug/ft²	
13016361	BinghamptonRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016362	BinghamptonRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	140	1200	ug/ft²	
13016363	BinghamptonRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	47	420	ug/ft²	
13016364	BinghamptonRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	24	220	ug/ft²	
13016365	BinghamptonRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft²	36	320	ug/ft²	
13016366	BinghamptonRC-LW-20	Flame	Wipe	****	0.111	110	ug/ft²	25	220	ug/ft²	
13016367	BinghamptonRC-PC-1	Flame	Paint Chip	****	N/A	0.0083	%Pb		0.031	%Pb	

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Client:	National Guard Bureau	Job Name:	Binghamton RC	Chain Of Custody:	514540
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Binghamton, NY	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/29/2012 Report Date: 11/29/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Non-Responsive

Analy

Non-Responsive

Technical Manager:

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514540

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Binghampton RC
2. Job Location: Binghampton, NY
3. Job #: 1061-15 P.O. #: W912K8-09-A-0003
4. Contact Person: [redacted] @ phone # [redacted]
5. Submitted by: [redacted] Signature: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due: ____	☐ Immediate ☐ 3 Day:	☒ Include [redacted] with Report
☐ 24 Hours Time Due: ____	☐ Next Day ☒ 5 Day + ☐ Results Required By Noon	☒ Email: [redacted] bonusenvironmental.com
Comments: ____	☐ 2 Day Date Due: 11/30/12	☒ Fax: [redacted] us.army.mil
		☒ Verbal: [redacted] us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
- ☐ NIOSH 7400 ____ (QTY)
- ☐ Fiberglass ____ (QTY)

TEM Air* – Please Indicate Filter Type:
- ☐ AHERA ____ (QTY)
- ☐ NIOSH 7402 ____ (QTY)
- ☐ Other (specify ____) ____ (QTY)

PLM Bulk
- ☐ EPA 600 - Visual Estimate ____ (QTY)
- ☐ EPA Point Count ____ (QTY)
- ☐ NY State Friable 198.1 ____ (QTY)
- ☐ Grav. Reduction ELAP 198.6 ____ (QTY)
- ☐ Other (specify ____) ____ (QTY)

MISC
- ☐ Vermiculite
- ☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
- ☐ ELAP 198.4/Chatfield ____ (QTY)
- ☐ NY State PLM/TEM ____ (QTY)
- ☐ Residual Ash ____ (QTY)

TEM Dust*
- ☐ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
- ☐ Quan. (s/area) Dust D6480-99 ____ (QTY)

TEM Water
- ☐ Qual. (pres/abs) ____ (QTY)
- ☐ ELAP 198.2/EPA 100.2 ____ (QTY)
- ☐ EPA 100.1 ____ (QTY)

☒ All samples received is good condition unless otherwise noted. (TEM Water samples ____ °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
- ☒ Pb Paint Chip 1 (QTY)
- ☒ *Pb Dust Wipe (wipe type Ghost) 20 (QTY)
- ☐ *Pb Air ____ (QTY)
- ☐ Pb Soil/Solid ____ (QTY)
- ☐ Pb TCLP ____ (QTY)
- ☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
- ☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
- ☐ Pb Furnace (Media ____) ____ (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples: ____
Collection Media ____
- ☐ *Spore-Trap ____ (QTY)
- ☐ Surface Vacuum Dust ____ (QTY)
- ☐ *Surface Swab ____ (QTY)
- ☐ Culturable ID Genus (Media ____) ____ (QTY)
- ☐ *Surface Tape ____ (QTY)
- ☐ Culturable ID Species (Media ____) ____ (QTY)
- ☐ Other (Specify ____) ____ (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WASTE AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11/21/12 @ 1125 Via: FEDEX By (Print): [redacted]
2. Date/Time Analyzed: ____/____/____ @ ____ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ____/____/____ Time: ____ Initials: ____
4. Comments: 7991-5136-1825

Surface Sampling Field Data Sheet

Date Collected: 11-16-12
Job Number: 1061-15
Contact Perso: Non-Responsive

Job Name: Binghampton RC
Job Location: 85 West End Ave.
Address: Binghampton, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
BinghamptonRC-LW-1	Field Blank	—	—	Ghost wipe
-2	Drill Hall	SE corner, top of Circuit breaker box	4"x4"	
-3	Drill Hall	NE corner, on heat register		
-4	Drill Hall	NW corner, on window sill		
-5	Drill Hall	SW corner, on brown metal housing		
-6	Drill Hall	on Floor, center of room		
-7	Kitchen	NW corner, top of Garland oven		
-8	Dining Hall	west side-center, top of light Fixture		
-9	Rm 46 Former Indoor Firing Range	center of Room, on Floor		
-10	Rm 46, Former Indoor Firing Range	South end, on ceiling heater		
-11	Fitness Rm	SE corner, on window sill		
-12	Locker Rm 15	SE corner, on ceiling heater		
-13	Rm 108 Distant Learning Rm	top of "SMART board"		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-16-12
Job Number: 1061-15
Contact Person: Non-Responsive

Job Name: Binghampton RC
Job Location: 85 West End Ave.
Address: Binghampton, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

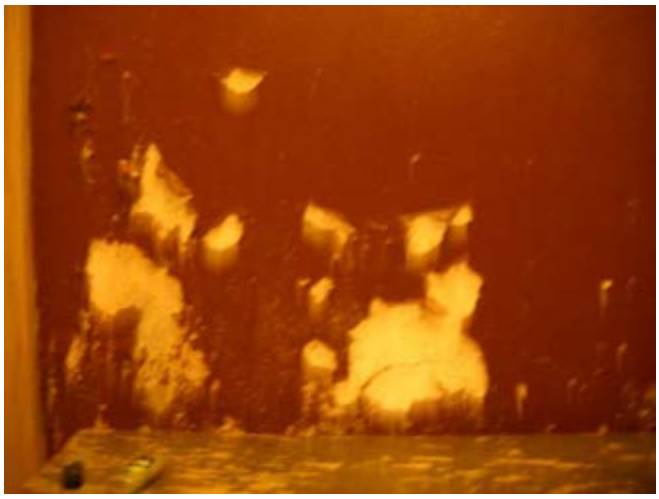
Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
BinghamtonRC-LW-14	Classroom 102	South end, top of Exit sign	4"x4"	Ghost wipe
-15	Main Hallway	center, top of display case		
-16	Break Rm 107	SE corner, on TV table		
-17	Copy Area	top of copy machine		
-18	Conf Rm	top of File cabinet		
-19	2nd Fl Hallway	top of emergency light fixture		
-20	Office 226	NE corner, on heat register		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax. www.amalab.com, info@amalab.com

Appendix C

Photographs

Building exterior, east side



Shower room 14, peeling brown paint

Room 46, former indoor firing range

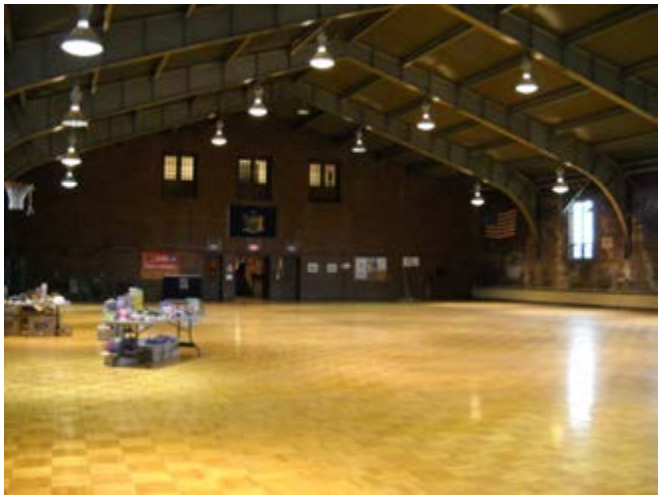
Dining Hall

Kitchen

Boiler room

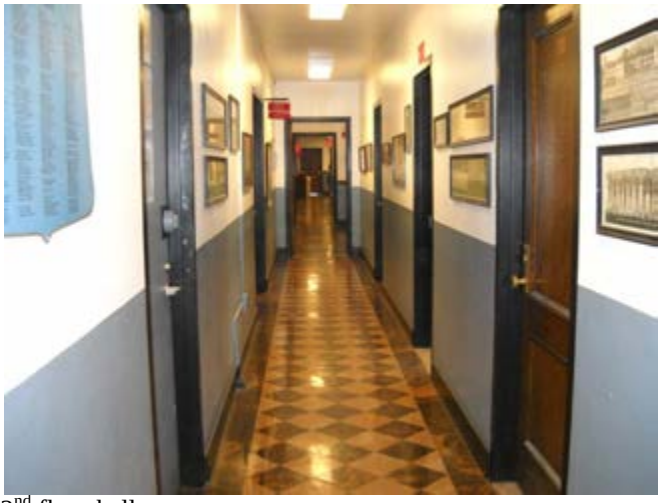
Locker room 12

Break room 107



Drill Hall

Drill hall, west wall, water-damaged bricks



2nd floor hallway

Appendix D

References

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 Jan 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

Consolidated Safety Services

The New York State Readiness Center
Geneseo, New York 14454

Submitted to:

National Guard Region North
Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

NATIONAL GUARD READINESS CENTER
INDUSTRIAL HYGIENE EVALUATION

Consolidated Safety Services, Inc.
10301 Democracy Lane, Suite 300
Fairfax, Virginia 22030
703-691-4612
703-691-4615 Facsimile
800-888-4612 Toll free
www.consolidatedsafety.com

The New York State Readiness Center
Geneseo, New York

Industrial Hygiene Evaluation

Prepared for:

National Guard Region North Industrial Hygiene Office
Havre de Grace, Maryland 21078

Prepared by:

Consolidated Safety Services, Inc.
10301 Democracy Lane, Suite 300
Fairfax, Virginia 22030

September 9, 2008

Prepared by: _____

Non-Responsive
Industrial Hygienist

Reviewed by: _____

Non-Responsive, CIH, CSP
Senior Project Manager, EHS

TABLE OF CONTENTS

Tables

Appendices

1. EXECUTIVE SUMMARY

Consolidated Safety Services, Inc. (CSS) was contracted by the U.S. Army National Guard to perform an industrial hygiene evaluation at the Geneseo New York State Readiness Center located at 34 Avon Road, in Geneseo, New York. Non-Responsive performed the evaluation on September 9, 2008. The point of contact for the facility was Mr. Non-Responsive, Maintenance Assistant. The purpose of the evaluation was to assess industrial hygiene concerns in the facility, evaluate workers' personal exposures, and review industrial hygiene and safety programs.

The following industrial hygiene and safety programs were evaluated during the site visit: confined space, hearing conservation, respiratory protection, hazard communication (HAZCOM), and personal protective equipment (PPE).

The following industrial hygiene concerns were evaluated during the site visit:

- Noise exposure;
- Illumination;
- Deteriorated suspect lead-based paints;
- Damaged suspect asbestos-containing materials;
- Water damage and possible mold growth;
- General housekeeping;
- Indoor air quality; and
- Ergonomics.

There were several industrial hygiene concerns identified during the assessment. The Risk Assessment Code (RAC) is presented for each identified concern or deficiency:

- There was visual evidence of minor water damage to the floor in the Basement Classroom. There was no evidence of suspect mold growth identified in the facility. The sources of the water intrusion should be identified and corrected. (**RAC 4**). **29 CFR 1960.8a**

- There are several locations where the measured illuminance levels are below those recommended by the Illuminating Engineering Society of North America. Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels (**RAC 4**). **ANSI/IESNA RP-1-04** (**Office Lighting**) **and ANSI ANSI/IESNA RP-7-01** (**Lighting Industrial Facilities**)

- Suspect asbestos-containing pipe insulation was noted in the basement area of the facility. The insulation is located on the fittings for the pipes and is in good condition. The insulation should be considered asbestos-containing until sampling is conducted to prove otherwise. In the interim, the condition of the pipe fitting insulation should be monitored on a routine basis to

insure that the materials are not damaged. Housekeeping and maintenance personnel should be advised of the presence of the suspect asbestos-containing material (**RAC 4**). **29 CFR 1910.1001(j)(7)(iv)** and **29 CFR 1960.8a**

- Asbestos-containing tan floor tile with tan flecks was identified in the First Floor Hallway and asbestos-containing black floor tile with brown flecks was identified in the Room 3 (Administration Office). Overall, the material was in good condition with a few areas of minor, isolated damage. It is recommended that a detailed operation and maintenance (O&M) plan be developed to insure that the condition of the floor tile is maintained in good condition. Housekeeping and maintenance personnel should be advised of the presence of the suspect asbestos-containing material (**RAC 4**). **29 CFR 1910.1001(j)(7)(iv)** and **29 CFR 1960.8a**

- There is one location where a lead dust wipe sample was above the NGB Region North IH Office limit of 200 micrograms/square foot (µg/ft^2). This area should be cleaned to eliminate the lead dust contamination. Anyone that may perform work in this area, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust (**RAC 4**). **NGB Region North IH Office limit of 200 micrograms/square foot (µg/ft^2)**

- Detectable levels of lead were found in all three paint chip samples collected and therefore considered to be lead-containing paint. OSHA requires that precautions be taken when lead is present, but does not define a threshold concentration below which no action is required. Therefore, anyone that may perform repair or maintenance activities to any surfaces in these areas must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead-containing paint. The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. There were no samples of peeling paint that contained levels of lead that were above the HUD criteria of 0.5% lead by weight (**RAC 4**). **Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62 and Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing**

- The second floor stair railing is loose and unstable, presenting a fall hazard. The railing should be replaced or repaired to eliminate the hazard (**RAC 4**). **29 CFR 1910.23(e)(3)(iv)**

2. INTRODUCTION

Consolidated Safety Services, Inc. (CSS) was contracted by the U.S. Army National Guard (USARNG) to perform an industrial hygiene evaluation at the Geneseo New York State Readiness Center at 34 Avon Road in Geneseo, New York. Non-Responsive performed the evaluation on September 9, 2008. The point of contact for the facility was Mr. Non-Responsive, Maintenance Assistant. The purpose of the evaluation was to review industrial hygiene and safety programs, evaluate potential exposures to physical and chemical hazards, and evaluate exposure control strategies and equipment. The building was visually inspected and evaluated for: damaged suspect asbestos-containing materials (ACM), water-damaged building materials, possible mold growth, housekeeping, deteriorated suspect lead-based paints, and poor indoor air quality.

The Geneseo New York State Readiness Center currently has one unit assigned to the facility: A CO (-), 2 BATTALION, 108 INFANTRY. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations. The building that houses the Geneseo New York State Readiness Center was constructed in 1900 and consists of multiple offices, a kitchen, a club room, men's and women's restrooms, classrooms, supply areas, a locker room, a drill hall, and an attached Field Maintenance Shop (FMS). The FMS was not accessible during the survey because the Maintenance Assistant did not have access to the key for entry. According to the Maintenance Assistant, the FMS has not been operational since January 2008.

The findings, discussion and interpretation of results are provided in Section 4 through Section 8. The conclusions are provided in Section 9. A diagram of the building layout is provided in Appendix A. Sampling sheets and laboratory results for Lead Paint, Lead in Air, and Lead dust are provided in Appendix B. Selected photographs taken during the evaluation are provided in Appendix C. An explanation of how the Risk Assessment Code (RAC) was determined is located in Appendix D. A list of references used during the evaluation is provided in Appendix E.

This report is for the sole use of the USARNG. The results presented in this report are only indicative of conditions during the time of the evaluation. This evaluation does not purport to include all occupational hazards at this facility, and only those areas and exposures specifically mentioned were evaluated.

3. EVALUATION METHODS

3.1 *Noise Survey*

Sound pressure levels were measured using a Larson Davis Spark noise dosimeter model # 706RC and serial #17309. The noise dosimeter was factory calibrated May 15, 2008.

3.2 *Illumination*

Illumination measurements were taken using a Cal-Light 400, factory calibrated on June 17, 2008, and results were compared to the American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

3.3 *Indoor Air Quality Measurements*

Indoor air quality parameters (i.e., carbon dioxide concentration, carbon monoxide concentration, temperature and relative humidity) were measured using a TSI Q-Trak Plus Model 8554, serial number 8554-04031056, factory calibrated in February 2008. Carbon dioxide, temperature and relative humidity measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). CO levels were compared to Occupational Safety and Health Administration Permissible Exposure Limit, the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for CO.

4. OPERATIONS DESCRIPTIONS

4.1 *Facility Operations*

There is currently one unit assigned to the facility: A CO (-), 2 Battalion, 108 Infantry. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations.

4.1.a. Noise Measurements

A sound level survey was performed to determine if there were any hazardous noise areas at the facility that could possibly result in exposures to personnel in excess of the Permissible Noise Dose. Sound pressure levels were measured throughout the facility. Measurements ranged from 50 dBA to 77 dBA within the facility. Exposure to sound pressure levels of this magnitude would not result in exposures equal to or in excess of the Permissible Noise Dose of 85 dBA averaged over an eight hour period.

4.1.b. Lighting Survey

Illumination levels were measured in all areas within the facility. The measurements indicate that several areas did not meet the illuminance levels recommended by the Illuminating Engineering Society of North America. The measurement results are presented in Table 1.

4.1.c. Additional Information

N/A

4.1.d. Recommendations

Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels.

5. PHYSICAL CONDITION OF THE FACILITY

5.1 *Visual Inspection – Peeling Paint – Lead*

A visual inspection was performed to determine if any areas of peeling or deteriorated paint at the facility could pose a lead exposure hazard. There were three areas identified where paint was peeling and may result in a potential exposure hazard. These areas include the Boiler Room, Room 14 (Old Kitchen), and the Basement Classroom. Three paint chip samples were collected and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) Method 7420.

The results, presented in Table 3, indicated detectable levels of lead in all of the samples collected. The paint is therefore considered to be lead-containing paint. All construction activities that involve lead-containing coatings are regulated by the Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62. The standard currently does not define a specific concentration of lead, which must be present within paint for it to be considered "lead-containing." Therefore, painted and glazed surfaces that contain detectable concentrations of lead must be handled in accordance with the OSHA Lead in Construction Standard. Any contractor performing work that could impact paint films or glazing that have detectable concentrations of lead must be informed of the testing results, and must take appropriate actions to comply with OSHA Standard 29 CFR 1926.62. These appropriate actions include performing air monitoring to measure worker exposure; assuring that the workers are provided with adequate respiratory protection; and assuring that workers are provided with appropriate training.

The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. All three paint chip samples collected contained less than 0.5% lead by weight and are not considered lead-based paint according to HUD.

5.2 *Visual Inspection – Dust – Lead*

Due to concerns with lead contamination, wipe samples were collected from various surfaces throughout the facility. Seventeen samples were collected from the walls, floors, and other surfaces. The samples were collected using “Ghost Wipes” using the prescribed NIOSH method for conducting surface wipe samples. Seventeen samples were collected and placed in new plastic containers and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) 600/R-93/200 Lead in Surface Wipe Samples. The results for the wipe samples, presented in Appendix B indicate that there was one sample from the Drill Hall that was above the NGB Region North IH Office limit of 200 micrograms/square foot (µg/ft^2). The Drill Hall should be cleaned to eliminate the lead dust contamination. Anyone that may perform work in these areas, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust.

5.3 *Visual Inspection – Asbestos*

A visual inspection was performed to determine if there was any suspect asbestos-containing material (ACM) at the facility and its condition. There was approximately 1420 square feet (ft^2) of 9

inch x 9 inch black floor tile with tan flecks, identified in Room 3 (Administration Offices), the First Floor Classroom, and in Room 11 Recruiter's Office. Approximately 800 ft^2 of 9 inch x 9 inch tan tile with brown flecks was identified throughout the first floor hallway and in Room 13 Officers' Locker Room. Approximately 200 ft^2 of 9 inch x 9 inch light-green floor tile with tan and dark green flecks was identified in Room 1 Superintendent's Office. Approximately 300 ft^2 of 9 inch x 9 inch brown tile with red and tan flecks was identified in Room 17 Club Room. In addition, 12 inch x 12 inch ceiling tile was observed in Room 3 (administration office), Room 11 (recruiter's office), Room 126 (Commander's Office), Room 127 (Storage), Room 128 (First SRG Office), and the first floor classroom. Overall, the material was in good condition with a few areas of minor, isolated damage. Two samples of floor tile and one sample of ceiling tile were collected and submitted to AMA Analytical Services, Inc., to be analyzed by Polarized Light Microscopy (PLM) and Transmission Electron Microscopy (TEM), to determine if the tiles are asbestos-containing. The result of the samples, presented in Table 4, indicate that the floor tile is asbestos-containing. It is recommended that anyone conducting work on any asbestos-containing material or presumed asbestos-containing material be made aware of the asbestos and the appropriate precautions be taken to minimize exposures. The condition of the floor tile should be monitored on a routine basis to insure that the materials are not damaged. In addition, there were green pipe fittings identified in the Basement Classroom (see Photo 12). All fittings were in good condition and no samples were collected. These fittings should be presumed to contain asbestos unless sampling is conducted to prove otherwise. It is recommended that anyone conducting work on any asbestos-containing material or presumed asbestos-containing material be made aware of the asbestos and the appropriate precautions be taken to minimize exposures. The condition of the pipe insulation should be monitored on a routine basis to insure that the materials are not damaged.

5.4 *Visual Inspection – Water Damage and Mold Growth*

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. There was no evidence of mold growth, but evidence of water staining to the cement Basement Classroom floor was noted (Photo 11). Water reportedly will back up through the sump pump during periods of hard rains. A dehumidifier is located in the Basement Classroom to help with the moisture problem. The sources of the water intrusion should be identified and controlled.

5.5 *Visual Inspection – Housekeeping and Maintenance*

A visual inspection was performed to assess the state of housekeeping in the facility. Housekeeping was good overall. However, the second floor stair railing is loose and unstable presenting a fall hazard. It is recommended that the railing be repaired or replaced.

6. BUILDING CONCERNS

6.1 *Ergonomic Concerns*

Interviews of employees were conducted and observations made to determine if there were work activities that result in any ergonomic concerns in the facility. No ergonomic concerns were identified.

6.2 *Illumination Issue*

Illumination levels were measured in all areas of the facility and the results indicate that some illuminance levels do not meet the levels recommended by the Illuminating Engineering Society of North America. The measurements ranged from a low of 5 foot candles (fc) to a high of 111 fc. The complete results of the evaluation can be found in Table 1, including whether or not the measured levels met ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities) recommendations for illumination.

6.3 *Indoor Air Quality (IAQ)*

Temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) were evaluated in the facility and compared with recognized "comfort factors." Currently, there are no enforceable regulatory IAQ standards. However, ASHRAE defines acceptable IAQ as air (1) in which there are no known contaminants at harmful levels, as determined by cognizant authorities, and (2) about which a substantial majority (80% or more) of the people exposed do not express dissatisfaction. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality," represents the state-of-the-art in ventilation design requirements for commercial, institutional, and residential buildings. It was developed "to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to minimize the potential for adverse health effects." The standard also considers chemical, physical, and biological contaminants and other factors that impact IAQ and affect occupant health and comfort.

A digital IAQ meter (TSI Q-Trak Plus, model #8554) was used to collect temperature, relative humidity, CO_2, and CO measurements in several areas throughout the facility. Results are provided in Table 2. These measurements were compared with current ASHRAE consensus standards and were found to be within acceptable limits.

6.3.a. Carbon Dioxide (CO_2)

Building occupants generate CO_2 as a product of respiration. Concentrations of CO_2 are often used during indoor air quality investigations to determine the effectiveness of ventilation systems in removing common indoor pollutants. The indoor CO_2 concentration will increase in a given space with fixed ventilation output in proportion to the number of building occupants and their activity level. ASHRAE Standard 62.1-2007 uses CO_2 as a surrogate indicator of building ventilation; namely, an indoor-outdoor CO_2 concentration differential of less than 700 parts per million (ppm) is considered to indicate adequate ventilation. This level is not considered an indication of a health risk, but rather an indicator for human comfort.

Indoor levels of CO_2 ranged from 350 parts per million (ppm) in the Drill Hall to 520 ppm in Locker Room. Outdoor CO_2 levels were approximately 345 ppm during the monitored period. The indoor CO_2 levels were less than 1220 ppm (the outdoor CO_2 levels plus 700 ppm), which indicates adequate ventilation.

6.3.b. Carbon Monoxide (CO)

The Occupational Safety and Health Administration has established a Permissible Exposure Limit for carbon monoxide of 50 parts per million (ppm) averaged over an eight-hour work day. Similarly, the American Conference of Governmental Industrial Hygienists has established a Threshold Limit Value of 25 parts per million (ppm) averaged over an eight-hour work day. The National Ambient Air Quality Standard (NAAQS) recommendation for ambient CO is below 9 parts per million (ppm) for an 8 hour work day. The CO measurements in the facility were below the monitor's level of detection, which is 1 part per million. These levels are well below established occupational exposure limits and CO is not expected to present a hazard to employees at this facility.

6.3.c. Temperature

Indoor temperature measurements in the facility ranged from 68°F in the Second Floor Locker Room to 73°F in the Basement Classroom. These measurements were compared with current ASHRAE consensus standards and were found to be within acceptable limits.

6.3.d. Relative Humidity

Indoor relative humidity (RH) measurements ranged from 56% in the Basement Classroom to 64% in the Drill Hall. Some of the relative humidity readings were above 60%, the level above which the potential for microbial growth increases. The facility was not climate controlled and some windows were open during the survey. The results of the measurements indicate that employees were not exposed to temperature or humidity levels at the time of the survey that could give rise to heat- or cold-induced injuries.

6.3.e. Lead Air Sampling

Due to concerns with lead contamination, air samples were collected from two areas in the facility; Room 3 (Administration Office) and Room 1 (Superintendent's Office). The samples were collected using SKC brand personal sampling pumps with the appropriate sampling media. Pumps were calibrated both before and after use with a Dry-Cal calibrator, which is considered a primary standard. General area samples were collected as close to breathing zone height as could be achieved. Samples were collected for 411 and 419 minutes, resulting in a sampled volume of 822 and 838 liters of air, respectively. The samples were shipped to AMA Analytical Services, Inc. and Analysis was conducted in accordance with the Environmental Protection Agency (EPA) 600/R-93/200 Lead in Air Samples. Both air samples were below the OSHA PEL and ACGIH TLV of 50 $\mu g/m^3$ as an 8 Hour time weighted average (TWA). The results from the air samples collected over the 6.9 and 7.0 hour periods were compared directly to the OSHA PEL, which is based on an 8-hour Time-Weighted Average, because the airborne concentration of lead is not expected to change in the office areas sampled. Results as reported by the laboratory are included as Appendix B.

7. INDUSTRIAL HYGIENE AND SAFETY PROGRAMS

An evaluation was performed to determine the applicability of the following programs:

- Confined Space;
- Hearing Conservation;
- Respiratory Protection;
- Hazard Communication (HAZCOM); and
- Personal Protective Equipment (PPE).

It was determined that all industrial hygiene and safety programs are managed at the unit level and there are no specific facility based programs; therefore, no programs were reviewed for the facility. According to the Maintenance Assistant, all facility employees are required to attend an annual safety class which includes a review of PPE standards, chemical inventory, asbestos awareness training, and hazardous assessment.

8. VEHICLE, EQUIPMENT AND HAZARDOUS MATERIALS LIST

The use of the items on the equipment and hazardous materials lists were evaluated and it appears that all the items are used at the facility. The Material Safety Data Sheets (MSDS) were in order and all chemicals found in the facility were listed in the materials list (or chemical inventory) at the beginning of the MSDS notebook. According to the Maintenance Assistant there is one Chevy pick-up truck assigned to the building.

9. CONCLUSION

Industrial hygiene concerns associated with some minor water damage to the basement floor was identified at the facility. Illumination levels were low in some areas of the facility. One lead dust wipe sample was above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). Detectable levels of lead were found in three lead paint chip samples. One minor housekeeping problem was identified. Suspect asbestos-containing materials were identified. Asbestos-containing 9 inch x 9 inch floor tile was identified in two locations. These concerns are discussed in Sections 4 through Section 8.

Tables

Table 1. Illumination Measurements
The New York State Readiness Center
Geneseo, New York
Date of Sampling: September 9, 2008

Location	Luminance (fc)[1]	Standard (fc)	Standard Met (Y/N)
First Floor			
Room 1 (Superintendent's Office)	39	50	N
Room 3 (Administration Office)	63 – 76	50	Y
Room 10 (Drill Hall)	15 – 25	30	N
Room 11 (Recruiter's Office)	60 – 71	50	Y
Room 13 Officers' Locker Room	19 – 33	7	Y
Room 14 (Old Kitchen)	20 – 47	50	N
Room 15 (Janitor's Closet)	25	7	Y
Room 17 Clubroom	5 – 31	30	N
Room 126 Commander's Office	31	50	N
Room 127 Storage	23	30	N
Room 128 First SRG Office	52	50	Y
Boiler Room	22 – 35	30	N
Classroom	45	30	Y
Kitchen	80 – 111	50	Y
Men's Restroom	6 – 10	7	N
State Shop	34 – 51	50	N
Second Floor			
Locker Room	25 - 84	7	Y
Basement			
Basement Hallway	5	7	N
Basement Classroom	38 - 40	30	Y
Basement State Room	25 - 30	30	Y
Old Firing Range	5 – 8	7	N

[1] fc = foot candles

The readings were taken with a Cal-Light 400, factory calibrated on June 17, 2008.

The standards listed in Table 1 are from ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities)

Table 2. Indoor Air Quality Measurements
The New York State Readiness Center
Geneseo, New York
Date of Sampling: September 9, 2008

Location	Occupants Present in Area	CO_2 (ppm)[1]	CO (ppm)	Relative Humidity (%)	Temperature (° F)
Basement					
Old Firing Range	2	405 – 460	<1	58 – 59	70 - 71
Basement Classroom	2	390 – 415	<1	56 – 57	72 - 73
First Floor					
Drill Hall	2	350 – 370	<1	63 – 64	72 - 73
Administration Office	2	390 – 412	<1	62 – 63	70 - 71
Class Room	2	358 – 390	<1	59 – 60	70 - 71
Second Floor					
Locker Room	2	470 – 520	<1	58 – 59	68 – 69

CO_2, CO, relative humidity and temperature measurements were taken with a TSI Q-Trak Plus Model 8554, calibrated February 2008.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommendations that indoor CO_2 concentration be maintained at a level that is less than 700 ppm above outdoor concentration.

National Ambient Air Quality Standard (NAAQS) recommendation for ambient CO: below 9 ppm

Occupational Safety and Health Administration Permissible Exposure Limit for CO: 50 ppm as an 8-hour time-weighted average (TWA) concentration

American Conference of Governmental Industrial Hygienists Threshold Limit Value for CO: 25 ppm as an 8-hour time-weighted average (TWA) concentration

Table 3. Peeling Paint Chip Sample Results
The New York State Readiness Center
Geneseo, New York
Date of Sampling: September 9, 2008

Sample Number	Location	Results (%)[1]
9092008 - 50	Boiler Room – gray peeling paint on floor	<0.0097
9092008 - 51	Room 14 (Old Kitchen) – blue peeling paint on wall	<0.011
9092008 - 52	Basement Classroom – peeling gray paint on floor	0.051

[1] Results cited as % lead by weight

The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight.

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) Method 7420

Table 4.Lead Wipe Samples
New York State Readiness Center
Geneseo, New York
Date of Sampling: September 9, 2008

Sample Number	Location	Sample Area[1]	Results (µg/ft²)[2]	NGB Standard (µg/ft²)[3]
9092008 - 01	Drill Hall - Left rear ventilation unit	12 in x 12 in	390	<200
9092008 - 02	Drill Hall - rear center floor	12 in x 12 in	94	<200
9092008 - 03	Drill Hall – center right ventilation unit	12 in x 12 in	<12	<200
9092008 - 04	Drill Hall – front right floor	12 in x 12 in	69	<200
9092008 - 05	Drill Hall – table top	12 in x 12 in	14	<200
9092008 - 06	Kitchen – top of storage rack	12 in x 12 in	<12	<200
9092008 - 07	Room 3 Administration Office – desk top	12 in x 12 in	<12	<200
9092008 - 08	Room 1 Superintendent Room – radiator	12 in x 12 in	<12	<200
9092008 - 09	First Floor Classrooom – floor near windows	12 in x 12 in	<12	<200
9092008 - 10	First Floor Hallway – floor near main entrance	12 in x 12 in	<12	<200
9092008 - 11	Old Firing Range – bullet trap area	12 in x 12 in	20	<200
9092008 -12	Old Firing Range – wall beside old bullet trap	12 in x 12 in	<12	<200
9092008 - 14	Old Firing Range – top of electrical box	12 in x 12 in	91	<200
9092008 -15	Basement Floor – outside old firing range	12 in x 12 in	37	<200
9092008 - 16	Basement Classroom – desktop	12 in x 12 in	75	<200
9092008 - 17	Room 11 Recruiter's Office – desktop	12 in x 12 in	<12	<200
9092008 - 18	Room 11 Recruiter's Office – top of filing cabinet	12 in x 12 in	<12	<200

1 Sampled area was 12 in x 12 in with a total area of 144 in² or at total of 1 ft²

2 Results are presented as microgram per square feet (µg/ft²)

3 Standard is based on the NGB Region North IH office policy

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 600/R-93/200.

The sample results were compared to the NGB Region North IH Office Policy of maintaining <200 µg/ft2

Table 5.General Area Air Samples for Lead
New York State Readiness Center
Geneseo, New York
Date of Sampling: September 9, 2008

Sample Number	Location	Sample Information			Results (ug/m³) [2]
		Time Sampled / Minutes	Flow Rate (lpm)[1]	Volume (liters)	
9092008 – A1	Room 3 (Administration Office)	411	2	822	<3.6
9092008 – A2	Room 1 (Superintendent's Office)	419	2	838	<3.6
OSHA PEL (8-hour TWA)[4]					50
ACGIH TLV (8-hour TWA)[5]					50

The results from the air samples collected over the 6.9 and 7.0 hour periods were compared directly to the OSHA PEL, which is based on an 8-hour Time-Weighted Average, because the airborne concentration of lead is not expected to change in the office areas sampled.

1 lpm = liters of air per minute

2 ug/m³ = micrograms per cubic meter

3 ND = Parameter not detected above LOD

4 U.S. Occupational Safety and Health Administration Permissible Exposure Limit (8-hour Time-Weighted Average)

5 American Conference of Governmental Industrial Hygienists Threshold Limit Value (8-hour Time-Weighted Average)

Table 6. Bulk Suspect Asbestos Containing Material (ACM) Samples
New York State Readiness Center
Geneva, New York
Date of Sampling: September 9, 2008

Sample Number	Location	Results (%)/Type[1]
9092008-30	Room 3 (Administration Office) – black 9 inch x 9 inch floor tile with tan flecks	2 % Chrysotile
9092008-31	First Floor Hallway – 9 inch x 9 inch tan floor tile with brown flecks	2 % Chrysotile
9092008 – 32	First Floor Classroom – 12 inch x 12 inch ceiling tile	No Asbestos Detected

[1]Results cited as % asbestos

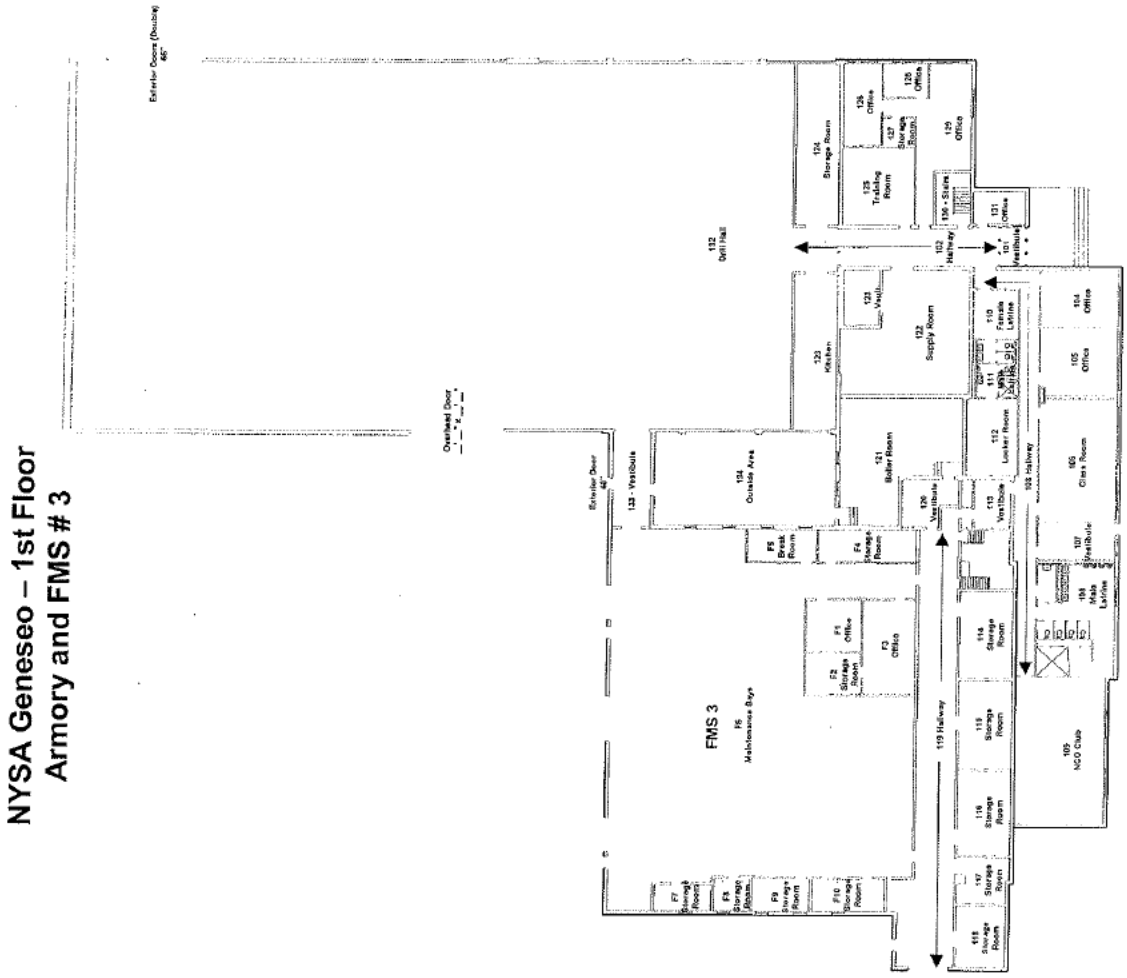
According to 29 CFR 1910.1001(b), Asbestos-containing material means any material containing more than 1% asbestos

Appendix A
Building Layout

NYSA Geneseo – 1st Floor Armory and FMS # 3

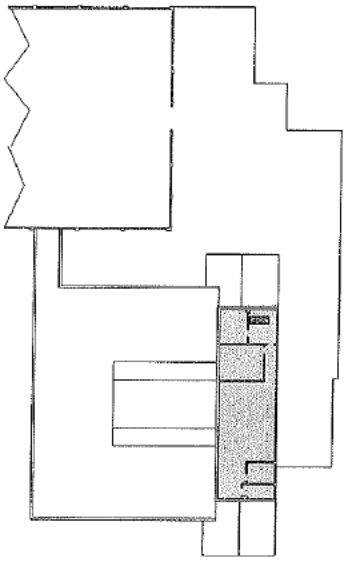
1st Floor Rooms
101 – Vestibule
102 – Hallway
103 – Hallway
104 – Office
105 – Office
106 – Class Room
107 – Vestibule
108 – Male Latrine
109 – NCO Club
110 – Female Latrine
111 – Male Latrine
112 – Locker Room
113 – Vestibule
114 – Storage Room
115 – Storage Room
116 – Storage Room
117 – Storage Room
118 – Storage Room
119 – Hallway
120 – Vestibule
121 – Boiler Room
122 – Unit Supply Room
123 – Kitchen
124 – Storage Room
125 – Training Room
126 – Office
127 – Storage Room
128 – Office
129 – Office
130 – Stairs to Basement
131 – State Office
132 – Drill Hall
133 – Vestibule
134 – Outside Area

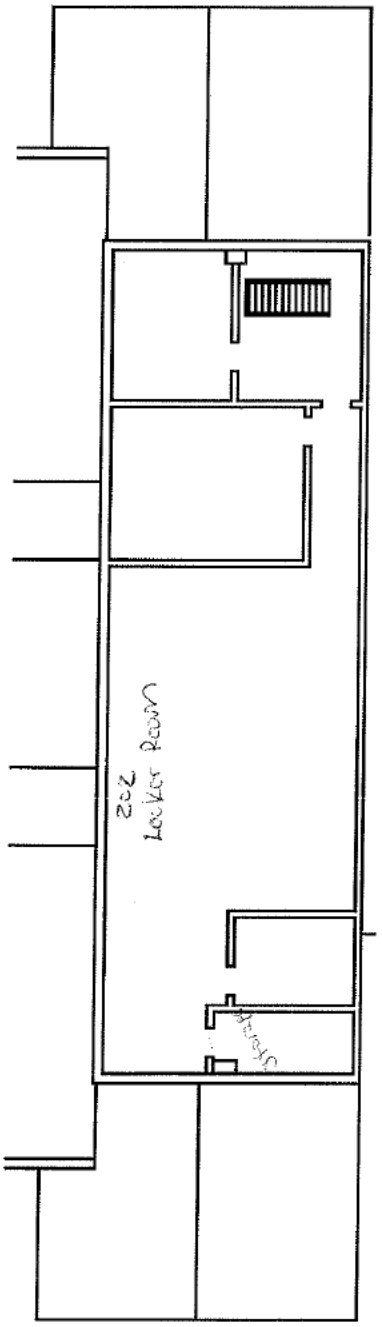
FMS Rooms
F1 – Office
F2 – Storage Room
F3 – Office
F4 – Storage Room
F5 – Break Room
F6 – Maintenance Bays
F7 – Storage Room
F8 – Storage Room
F9 – Storage Room
F10 – Storage Room

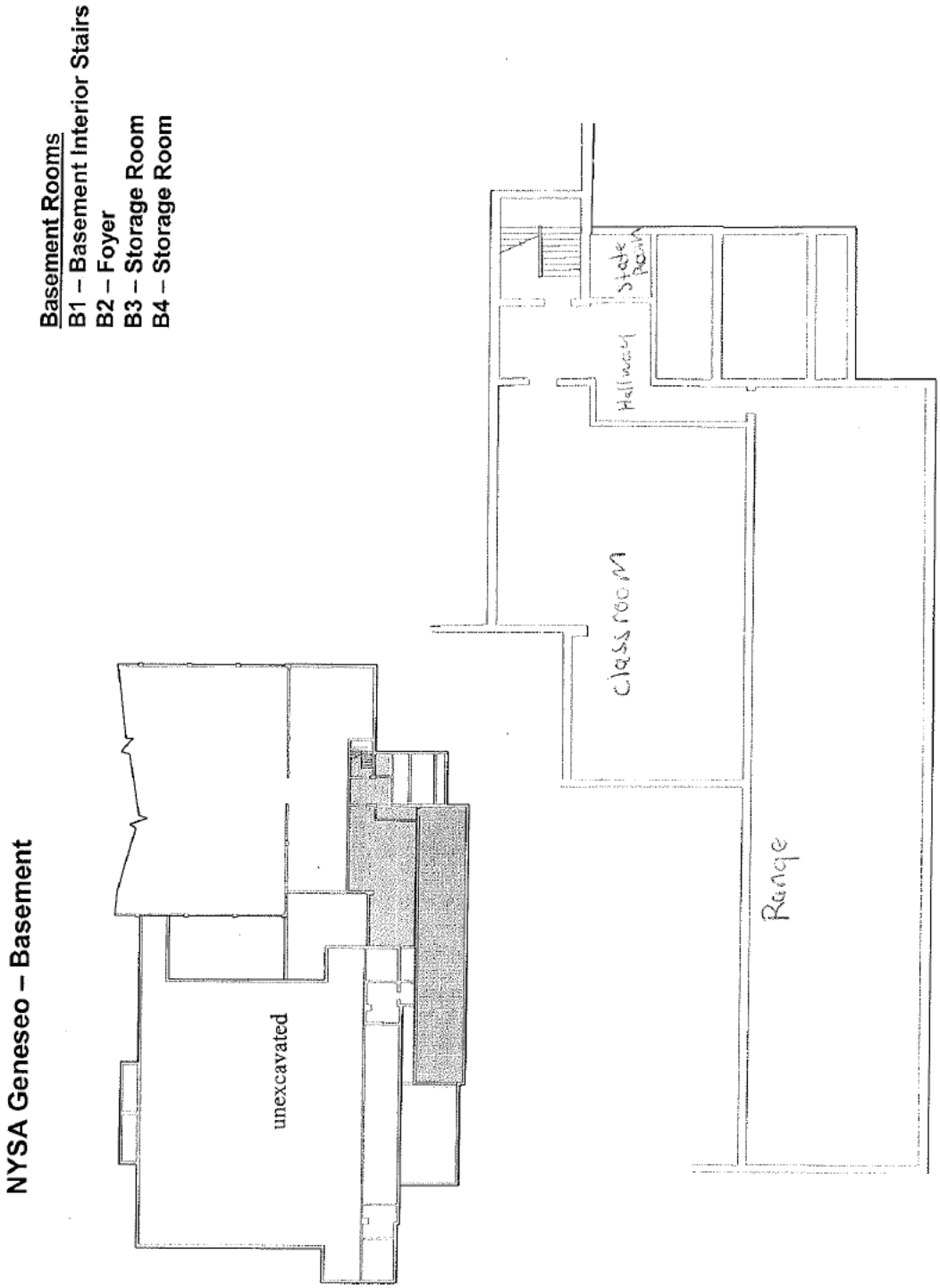


NYSA Geneseo – 2d Floor

2d Floor Rooms
201 – Interior Stairs
202 – Locker Room
203 – Storage Room
204 – Storage Room







Appendix B

Sampling Sheets and Laboratory Results for Suspect Asbestos Floor Tile and Ceiling Tile Samples, Lead Paint Chip Samples, Lead Dust Wipe Samples, and Lead Air Samples

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 148436

Page 1 of 2

Mailing/Billing Information:
1. Client Name: NGB Region North 3H office
2. Address 1: 301 - 3H old Bay Lane
3. Address 2: Havre De Grace, MD 21078
4. Address 3:
5. Phone #: 410-942-0273 x 5 Fax #: 410-942-0254

Submittal Information:
1. Job Name: New York State Armory Geneseo
2. Job Location: Geneseo, NY
3. Job #: P.O. #:
4. Contact Person: [redacted] @ phone # 571-265-6230
5. Submitted by: [redacted] Signature: [redacted]

❑ Please include COC/field data sheets with results

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: ___/___/___ @ ___ ☐ Immd. ☐ 24hr ☐ 48hr ☐ 72hr ☐ 5 Day + ☐ Immd. After-Hours* ☐ 24hr After-Hours* ☐ Late-Night* (*must be pre-scheduled)
❑ Verbals: ___ @ cell # ___ ❑ Fax Copy: ___ @ fax # ___ ❑ Email Copy: ___ @ ___

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity___ in a 25mm 37mm
❑ NIOSH 7400___(QTY)
❑ Fiberglass ___(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity___ in a 25mm 37mm
❑ AHERA ___(QTY)
❑ NIOSH 7402 ___(QTY)
❑ Other (specify___)___(QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 3 (QTY)
❑ EPA Point Count ___(QTY)
❑ NY State Friable ___(QTY)
❑ Grav. Reduction ELAP 198.1 ___(QTY)
❑ Other (specify___)___(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield ___(QTY)
❑ NY State PLM/TEM ___(QTY)
❑ Residual Ash ___(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust ___(QTY)
❑ Quan. (s/area) Vacuum D5755-95 ___(QTY)
❑ Quan. (s/area)Dust D6480-99 ___(QTY)
TEM Water
❑ Qual. (pres/abs) ___(QTY)
❑ ELAP 198.2/EPA 100.2 ___(QTY)
❑ EPA 100.1 ___(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples ___ °C)

Lead Analysis
☒ Paint Chip 3 (QTY)
☒ Dust Wipe (wipe type: Ghost Wipe) 18 (QTY)
☒ Air 2 (QTY) @ 2 L/min
❑ Soil/Solid ___(QTY)
❑ TCLP ___(QTY)
❑ Drinking Water ___(QTY)
❑ Waste Water ___(QTY)
❑ Dust Wipe Furnace (wipe type ___) ___(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap ___(QTY) ❑ Bulk ___ (QTY)
❑ Surface Swab ___ (QTY) ❑ Surface Vacuum Dust ___(QTY)
❑ Surface Tape ___ (QTY) ❑ Other (Specify___) ___(QTY)

SAMPLE INFORMATION					ANALYSIS							MATRIX					CLIENT CONTACT
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
9092008-01	Drill Hall	9/9/08		1ft²				X				X					Date/Time: Contact: By:
9092008-02	Drill Hall							X				X					
9092008-03	Drill Hall							X				X					
9092008-04	Drill Hall							X				X					
9092008-05	Drill Hall							X				X					Date/Time: Contact: By:
9092008-06	Kitchen							X				X					
9092008-07	Admin Office							X				X					
9092008-08	Supervisor, Asst							X				X					
9092008-09	Classroom							X				X					Date/Time: Contact: By:
9092008-10	First floor Hall							X				X					
9092008-11	Firing Range							X				X					
9092008-12	old Firing Range							X				X					
9092008-13	old Firing Range							X				X					

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ___/___/___ @ ___ Via: ___ By (Print): ___ Sign: ___
2. Date/Time Analyzed: ___/___/___ @ ___ By (Print): ___ Sign: ___
3. Results Reported To: ___ Via: ___ Date: ___/___/___ Time: ___ Initials: ___
4. Comments: ___

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159442

Mailing/Billing Information:

1. Client Name: _____
2. Address 1: _____
3. Address 2: _____
4. Address 3: _____
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: New York State Armory Geneseo
2. Job Location: Geneseo, NY
3. Job #: _____ P.O. #: _____
4. Contact Person: [redacted] 265-6230
5. Submitted by: [redacted] Signat[redacted]

❑ Please include COC/field data sheets with results

Reporting Information (Results will be provided as soon as technically feasible):

Date & Time Results Required: ____/____/____ @ _____ ❑Immd. ❑24hr ❑48hr ❑72hr ❑5 Day + ❑Immd. After-Hours* ❑24hr After-Hours* ❑Late-Night* (*must be pre-scheduled)

❑ Verbals: _____ @ cell # _____ ❑ Fax Copy: _____ @ fax # _____ ❑ Email Copy: _____ @ _____

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity____ in a 25mm 37mm
❑ NIOSH 7400 _____ (QTY)
❑ Fiberglass _____ (QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity____ in a 25mm 37mm
❑ AHERA _____ (QTY)
❑ NIOSH 7402 _____ (QTY)
❑ Other (specify_____) _____ (QTY)

PLM Bulk
❑ EPA 600 – Visual Estimate _____ (QTY)
❑ EPA Point Count _____ (QTY)
❑ NY State Friable 198.1 _____ (QTY)
❑ Grav. Reduction ELAP 198.6 _____ (QTY)
❑ Other (specify_____) _____ (QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield _____ (QTY)
❑ NY State PLM/TEM _____ (QTY)
❑ Residual Ash _____ (QTY)

TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
❑ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
❑ Quan. (s/area)Dust D6480-99 _____ (QTY)

TEM Water
❑ Qual. (pres/abs) _____ (QTY)
❑ ELAP 198.2/EPA 100.2 _____ (QTY)
❑ EPA 100.1 _____ (QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____ °C)

Lead Analysis
❑ Paint Chip _____ (QTY)
❑ Dust Wipe (wipe type_____) _____ (QTY)
❑ Air _____ (QTY)
❑ Soil/Solid _____ (QTY)
❑ TCLP _____ (QTY)
❑ Drinking Water _____ (QTY)
❑ Waste Water _____ (QTY)
❑ Dust Wipe Furnace (wipe type _____) _____ (QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap _____ (QTY) ❑ Bulk _____ (QTY)
❑ Surface Swab _____ (QTY) ❑ Surface Vacuum Dust _____ (QTY)
❑ Surface Tape _____ (QTY) ❑ Other (Specify_____) _____ (QTY)

SAMPLE INFORMATION					ANALYSIS					MATRIX							CLIENT CONTACT (LABORATORY STAFF ONLY)		
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	Date/Time:	Contact:	By:
7092008-14	old Dining Room	9/9/08		144 ft²				X				X							
7092008-15	Basement Hallway			144 ft²				X				X							
7092008-16	Basement Class			144 ft²				X				X							
7092008-17	Recruiters office			144 ft²				X				X							
7092008-18	Recruiters office			144 ft²				X				X					Date/Time:	Contact:	By:
7092008-30	Admin office						X				X								
7092008-31	2nd Floor Hall						X				X								
7092008-32	1st Floor Class						X				X								
7092008-50	Boiler Rm							X			X						Date/Time:	Contact:	By:
7092008-51	Old Kitchen							X			X								
7092008-52	Basement Class							X			X								
7092008-A1	Admin office		2L/Min					X		X									
7092008-A2	Basement Class		2L/Min					X		X									

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: ____/____/____ @ _____ Via: _____ By (Print): _____ Sign: _____
2. Date/Time Analyzed: ____/____/____ @ _____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____/____/____ Time: _____ Initials: _____
4. Comments: _____

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

ACCREDITED LABORATORY AIHA Environmental Lead

100470

NY ELAP

10920

CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	**Job Name:**	New York Armory Geneseo	**Chain Of Custody:**	148436
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Geneseo, NY	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	10/9/2008
Attention:	[redacted]				**Report Date:** 10/9/2008

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result			Comments
0901463	9092008-01	Flame	Wipe	****	1.000	12	ug/ft²		390	ug/ft²	
0901464	9092008-02	Flame	Wipe	****	1.000	12	ug/ft²		94	ug/ft²	
0901465	9092008-03	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901466	9092008-04	Flame	Wipe	****	1.000	12	ug/ft²		69	ug/ft²	
0901467	9092008-05	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901468	9092008-06	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901469	9092008-07	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901470	9092008-08	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901471	9092008-09	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901472	9092008-10	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901473	9092008-11	Flame	Wipe	****	1.000	12	ug/ft²		20	ug/ft²	
0901474	9092008-12	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901476	9092008-14	Flame	Wipe	****	1.000	12	ug/ft²		91	ug/ft²	
0901477	9092008-15	Flame	Wipe	****	1.000	12	ug/ft²		37	ug/ft²	
0901478	9092008-16	Flame	Wipe	****	1.000	12	ug/ft²		75	ug/ft²	
0901479	9092008-17	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901480	9092008-18	Flame	Wipe	****	1.000	12	ug/ft²	<	12	ug/ft²	
0901481	9092008-50	Flame	Paint Chip	****	N/A	0.0097	%Pb	<	0.0097	%Pb	

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A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead See aihaaccap.org for details 100470

NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	New York Armory Geneseo	**Chain Of Custody:**	148436
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SL State Military Reservation Havre de Grace, Maryland 21078	**Job Location:**	Geneseo, NY	**Date Submitted:**	10/3/2008
		Job Number:	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	10/9/2008
				Report Date:	10/9/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0901483	9092008-S2	Flame	Paint Chip	****	N/A	0.01	%Pb	0.051	%Pb	
0901484	9092008-A1	Flame	Air	822	N/A	3.6	ug/m³	< 3.6	ug/m³	
0901485	9092008-A2	Flame	Air	838	N/A	3.6	ug/m³	< 3.6	ug/m³	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.

NY ELAP accredidation applies only to paint chip, wipe, and water samples.

Analyst: [redacted]

Technical Manager [redacted]

An AIHA (#100470), NVLAP (101143-0), and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD. 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	New York Armory Geneseo	**Chain Of Custody:**	148436
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation Havre de Grace, Maryland 21078	**Job Location:**	Geneseo, NY	**Date Analyzed:**	10/9/2008
		Job Number:	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0901486	9092008-30	2	2	--	--	--	--	--	--	--	--	98	Black	Homogeneous	LBP	
0901487	9092008-31	2	2	--	--	--	--	--	--	--	--	98	Beige	Homogeneous	LBP	
0901488	9092008-32	NAD	--	--	--	--	50	--	--	--	--	50	White	Homogeneous	LBP	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

[redacted]

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Appendix C
Selected Photographs of the Geneseo New York State Readiness Center

Photo 1: The exterior front of the building that houses the Geneseo New York State Readiness Center.

Photo 2: An exterior side view of the building that houses the Geneseo New York State Readiness Center.

Photo 3: A view of the Drill Hall located on the first floor of the Geneseo New York State Readiness Center.

Photo 4: A view of the old firing range that has reportedly been cleaned and is not a simulator firing range.

Photo 5: 9 inch x 9 inch black floor tile with tan flecks located in Room 3 (Administration Office).

Photo 6: 9 inch x 9 inch floor tile with brown, red, and tan flecks in Room 17 (Club Room).

Photo 7: 9 inch x 9 inch light-green floor tile with tan and dark green flecks was observed in Room 1 (Superintendent's Office).

Photo 8: Suspect asbestos pipe insulation located in Room 17 (Club Room).

Photo 9: Suspect asbestos pipe insulation located in the Boiler Room.

Photo 10: A hand railing is loose and unstable, presenting a fall hazard in the second floor Locker Room.

Photo 11: Evidence of water incursion in the Basement Classroom.

Photo 12: Green suspect asbestos pipe fittings located in the Basement Classroom.

Appendix D
Risk Assessment Code Determination

RISK ASSESSMENT CODE DETERMINATION

A Risk Assessment Code (RAC) for each hazard identified is provided at the end of each hazard description. The RAC codes are derived using the matrix provided by the National Guard (reference DOD Instruction 6055.1). This process includes three steps:

- Step 1: Determine the Health Hazard Severity Code (HHSC)

A. Exposure Points Assessed

	Exposure Conditions				
		<CT	**Occasionally >CT Always <STD**	**>CT ≤STD**	**>STD**
AER Possible?	No	0	3	5	7
	Yes	1-2	4	6	8

AER – Alternate exposure route, such as skin absorption, ingestion

CT – DoD component threshold that triggers surveillance actions, such as microwatts/cm^2, dB, parts per million (ppm)

STD – DoD exposure limit, such as Threshold Limit Value (TLV) and Permissible Exposure Limit (PEL)

B. Medical Effects Points Assessed

Condition	Points
No medical effect, such as nuisance noise and nuisance odor	2
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability such as metal fume fever	3-4
Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling, irreversible illness or death, such as asbestosis and lung cancer	7-8

C. Determine the HHSC by totaling the points assessed and using the following guide:

Total Points (sum of A and B)	HHSC
13-16	I
9-12	II
5-8	III
0-4	IV

- Step 2: Determine the Mishap Probability Category (MPC)

A. Duration of Exposure Points Assessed

		Length of Exposure		
		1-8 hr/week	>8hr/week not continuous	Continuous
Type of Exposure	Irregular, intermittent	1-2	4-6	----
	Regular, periodic	2-3	5-7	8

B. Number of Exposed Personnel Points Assessed

Number of Exposed Personnel	Points
<5	1-2
5-9	3-4
9-49	5-6
>49	7-8

C. Determine the MPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum A and B)	MPC
14-16	A
10-13	B
5-9	C
<5	D

Step 3: Determine the RAC using the following matrix;

		Mishap Probability Category (MPC)			
		A	B	C	D
Health Hazard Severity Code	I	1	1	2	3
	II	1	2	3	4
	III	2	3	4	5
	IV	3	4	5	5

Appendix E
References

References

1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
2. Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.
3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.
4. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.
5. Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, May 25, 2007.
6. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007.
7. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 10, 1998.
8. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
9. Technical Manual (TM) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.
10. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
11. Industrial Ventilation – A Manual of Recommended Practices, American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
12. ANSI Z358.1 – 2004, Emergency Eyewash and Shower Equipment.
13. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
14. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
15. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2007, “Ventilation for Acceptable Indoor Air Quality”.
16. Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Geneseo Readiness Center
Geneseo, NY 14454-1002

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 31, 2013

Bonus Environmental, LLC

TABLE OF CONTENTS

APPENDICES

January 31, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Geneseo Readiness Center, Geneseo, NY 14454-1002

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Geneseo Readiness Center located at 34 Avon Road in Geneseo, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 26, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Geneseo Readiness Center is an Army National Guard armory comprised of offices, a classroom, maintenance bays (currently used for storage/weight room), locker rooms, storage rooms, a drill hall, kitchens (old and newer), boiler rooms (old and newer), and a former indoor firing range (used as a training room). The point of contact for the approximately 34,329 ft² Geneseo Readiness Center is Mr. Raymond Carmody. Eight (8) full-time administrative personnel are employed at the Geneseo Readiness Center. Health and Safety programs reviewed during the survey included Personal Protective Equipment (PPE), Lock-Out/Tag-Out, Hazcom, Fire Safety, and Asbestos Awareness. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twelve (12) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Geneseo Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
Geneseo RC-LW-1	11-26-12	Field Blank	---	< 12 μg
Geneseo RC-LW-2	11-26-12	Drill Hall, on floor, South end	0.111	300
Geneseo RC-LW-3	11-26-12	Drill Hall, on floor, North end	0.111	240
Geneseo RC-LW-4	11-26-12	Drill Hall, on top of Amnesty Box	0.111	360
Geneseo RC-LW-5	11-26-12	Drill Hall, on top of Control Panel Box #4	0.111	7,700
Geneseo RC-LW-6	11-26-12	Drill Hall, on top of table	0.111	130
Geneseo RC-LW-7	11-26-12	Maintenance Bay 1, on top of storage shelf	0.111	380
Geneseo RC-LW-8	11-26-12	Locker Room, on top of locker #6	0.111	< 110
Geneseo RC-LW-9	11-26-12	Motor Vehicle Storage Building, on floor, center	0.111	1,000
Geneseo RC-LW-10	11-26-12	Kitchen, on top of refrigerator	0.111	140
Geneseo RC-LW-11	11-26-12	Training Room (Former Indoor Firing Range), on floor, bullet trap area	0.111	220
Geneseo RC-	11-26-12	Training Room (Former Indoor Firing Range), on ventilation	0.111	< 110

Army National Guard – Geneseo Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-12		grill		
Geneseo RC-LW-13	11-26-12	Training Room (Former Indoor Firing Range), on light fixture	0.111	< 110

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range is currently used as a Training Room. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Geneseo Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified one area of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified approximately 1 ft² of peeling white paint in the former kitchen (107).

One (1) paint chip sample was collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. See table below for sample information:

Army National Guard – Geneseo Readiness Center *Paint Chip Sample*				
Sample #	*Sample Location*	*Color*	*Analytical Reporting Limit (%)*	*Analytical Results (%)*
Geneseo RC-PC-1	Room 107 (former kitchen)	White	0.0067	< 0.0067

Analysis indicated that the sample of the peeling paint collected did not contain detectable levels of lead. The paint is therefore not considered to be lead-based paint. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Geneseo Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC observed the following damaged PACM during the industrial hygiene evaluation:

- Approximately 1 lineal foot of damaged thermal systems pipe insulation located in the 1st floor hallway;

- Approximately 1 lineal foot of damaged/moldy thermal systems pipe insulation located in storage room 114;
- Approximately 2 lineal feet of damaged thermal systems pipe insulation located in the old boiler room (121A);
- Approximately 1 ft² of damaged wall plaster located in the former kitchen (107).

Samples were collected of the pipe insulation and the plaster PACM's and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. Analytical results determined that both the thermal systems pipe insulation and the wall plaster analytical results determined the materials to be "No Asbestos Detected".

Bonus Environmental, LLC collected a general area air sample within the vicinity of the damaged thermal systems pipe insulation located within the 1st floor hallway. Analytical results indicate the levels of airborne asbestos fibers to be less than the Asbestos Hazard Emergency Response Act (AHERA) clearance criteria of 0.01 fibers/cubic centimeter (f/cc). Analytical results of the asbestos bulk and air samples are attached to this report as Appendix C.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Geneseo Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified the following water-damaged and/or moldy building materials:

- Approximately 16 ft^2 of water-stained cement floor in storage room B3;
- Approximately 1 ft^2 of water-damaged/moldy pipe insulation in storage room 114;
- Approximately 1 ft^2 of water-damaged wall plaster in room 107, former kitchen.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Geneseo Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Geneseo Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Geneseo Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

One (1) employee expressed concern regarding damaged pipe insulation located in the 1st floor hallway, concerned that it may be asbestos. Analytical results indicated this material to be non-asbestos.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Geneseo Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 386 ppm to 531 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 2.0 ppm to 9.6 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Geneseo Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 55.4ºF to 63.7ºF and are not considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Geneseo Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 29.3% to 100.0%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Geneseo Readiness Center *Indoor Air Quality Measurements*				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, north side of building (overcast)	386	9.6	32.9	41.0
Basement, Storage B3 (standing water puddles)	401	2.6	**100.0**	**57.9**
Basement, Training Room B5 (standing water present)	391	2.0	**100.0**	**55.4**
Drill Hall 132	420	3.9	29.3	**62.2**
Office 129 (3 people in room)	531	2.8	42.4	**63.7**
Classroom 105	424	3.6	37.8	**63.6**
NCO Club 109	421	3.7	35.3	**61.4**
Storage Room 118	418	4.4	31.6	**58.0**
Storage Room F7	402	4.6	32.3	**59.1**
Maintenance Bay 2	396	5.2	31.8	**59.3**
Storage Room 114	405	4.4	33.0	**57.9**

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Geneseo Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Geneseo Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Storage (B3)	28.3	30	No
Training Room (Former Indoor Firing Range)	3.6	30	No
Back Flow Room (B4)	17.2	30	No
State shop office (124)	26.0	50	No
Kitchen (125)	56.3	50	Yes
(123)	Inaccessible		
Annex (136)	Inaccessible		
Drill Hall (132)	7.1	30	No
Maintenance Bay 1 (F6) (storage/weight room)	14.7	30	No
Maintenance Bay 2 (F6) (storage/weight room)	27.6	30	No
Maintenance Bay 3 (F6) (storage/weight room)	22.1	30	No
(F7)	Inaccessible		
Storage (F8)	64.9	30	Yes
(F9)	Inaccessible		
Chemical Storage (F10)	Inaccessible		
Office (F1)	58.6	50	Yes
Office (F5)	Lighting Inoperable		
Locker Room (F4)	51.6	7	Yes

Army National Guard – Geneseo Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Tool and Parts Room (F3)	72.1	30	Yes
1st Floor Hallway	101.6	5	Yes
Office (118)	2.5	50	No
(117)	Inaccessible		
(116)	Inaccessible		
Office/Storage (115)	21.7	50	No
Storage (114)	18.9	30	No
Old Boiler Room (121A)	0.8	30	No
Boiler Room (121)	63.2	30	Yes
Hallway (113)	55.7	5	Yes
Former Club/Storage (109)	7.4	30	No
Men's Restroom (108)	3.6	5	No
Former Kitchen (107)	90.9	50	Yes
Classroom (106)	113.9	30	Yes
NCO Locker Room (112)	18.8	7	Yes
Classroom (105)	66.9	30	Yes
Recruiter's Office (104)	142.8	50	Yes
Women's Restroom (110)	72.2	5	Yes
Superintendent's Office (131)	111.5	50	Yes
Copy Room (129)	140.9	10	Yes
Office (128)	52.6	50	Yes
Telecommunication's Room (127)	90.3	30	Yes
Office (126)	93.7	50	Yes
Commander's Office (125)	91.1	50	Yes
Supply Room (122)	Inaccessible		
Locker Room (201)	Inaccessible		
Storage Room (202)	Inaccessible		
Motor Vehicle Storage Building	5.4	30	No

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - VENTILATION SYSTEM EVALUATION

5.1 - Vehicle Exhaust System

A vehicle exhaust hood ventilation system had previously been installed in the Maintenance Bays, but has subsequently been disconnected. It was reported to Bonus Environmental, LCC that the Maintenance Bays are not used to work on vehicles, that they are currently used for storage and as a work out/weight room.

6.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Geneseo Readiness Center located at 34 Avon Road in Geneseo, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on November 26, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Geneseo Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:

    - Drill Hall, on floor, South end
    - Drill Hall, on floor, North end
    - Drill Hall, on top of Amnesty Box
    - Drill Hall, on top of Control Panel Box #4
    - Maintenance Bay 1, on top of storage shelf
    - Motor Vehicle Storage Building, on floor, center
    - Training Room (former indoor firing range), on floor, "bullet trap" area (no bullet trap remains in area).

2. Bonus Environmental, LLC identified an area of peeling white paint in room 107 (former kitchen), which did not contain detectable levels of lead.

3. Bonus Environmental, LLC observed damaged presumed asbestos-containing materials (PACM) in the following locations:

    - Approximately 1 lineal foot of damaged thermal systems pipe insulation located in the 1st floor hallway;
    - Approximately 1 lineal foot of damaged/moldy thermal systems pipe insulation located in storage room 114;
    - Approximately 2 lineal feet of damaged thermal systems pipe insulation located in the old boiler room (121A);
    - Approximately 1 ft² of damaged wall plaster located in the former kitchen (107).

    Analytical results determined each of these materials to have "No Asbestos Detected."

4. Bonus Environmental, LLC identified the following water-damaged and/or moldy building materials:

    - Approximately 16 ft^2 of water-stained cement floor in storage room B3;

- Approximately 1 ft^2 of water-damaged/moldy pipe insulation in storage room 114;
- Approximately 1 ft^2 of water-damaged wall plaster in room 107, former kitchen.

5. Bonus Environmental, LLC found the housekeeping practices within Geneseo Readiness Center in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified. One (1) employee expressed concern regarding damaged pipe insulation located in the 1st floor hallway, concerned that it may be asbestos. Analytical results indicated this material to be non-asbestos.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Geneseo Readiness Center. All were found to be within their acceptable ranges/limits; with the exception of all temperature readings and two relative humidity readings.

8. Areas within the Geneseo Readiness Center were identified as improperly illuminated.

9. Health and Safety programs reviewed during the survey included Personal Protective Equipment (PPE), Lock-Out/Tag-Out, Hazcom, Fire Safety, and Asbestos Awareness.

10. No vehicle maintenance occurs in the Maintenance Bays, which are used for storage and as a weight room. A vehicle exhaust hood ventilation system had previously been installed in the Maintenance Bays, but has subsequently been disconnected.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings,

conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

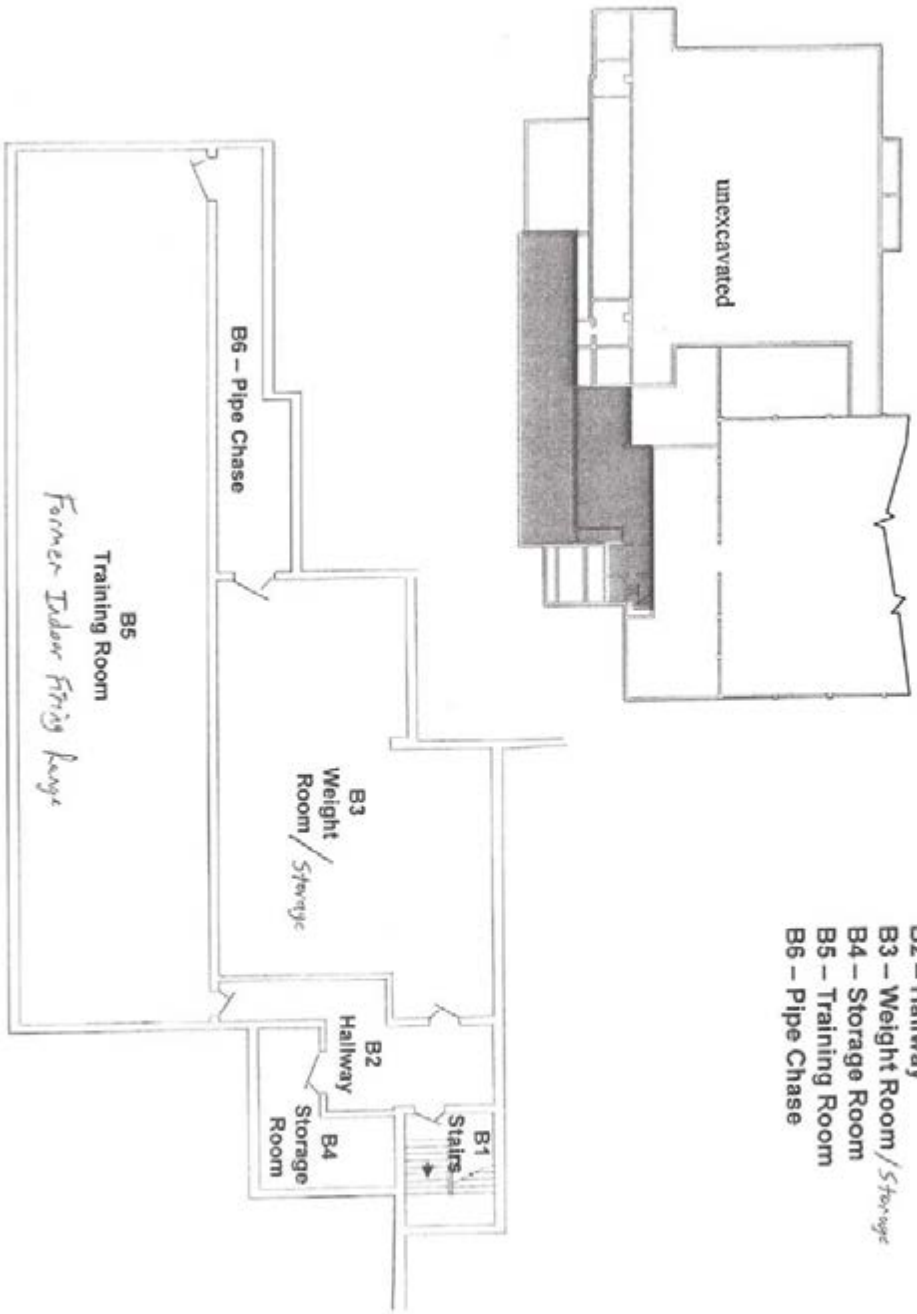
Non-Responsive

Bonus Environmental, LLC

Appendix A

Shop Diagram and Air Flow Patterns

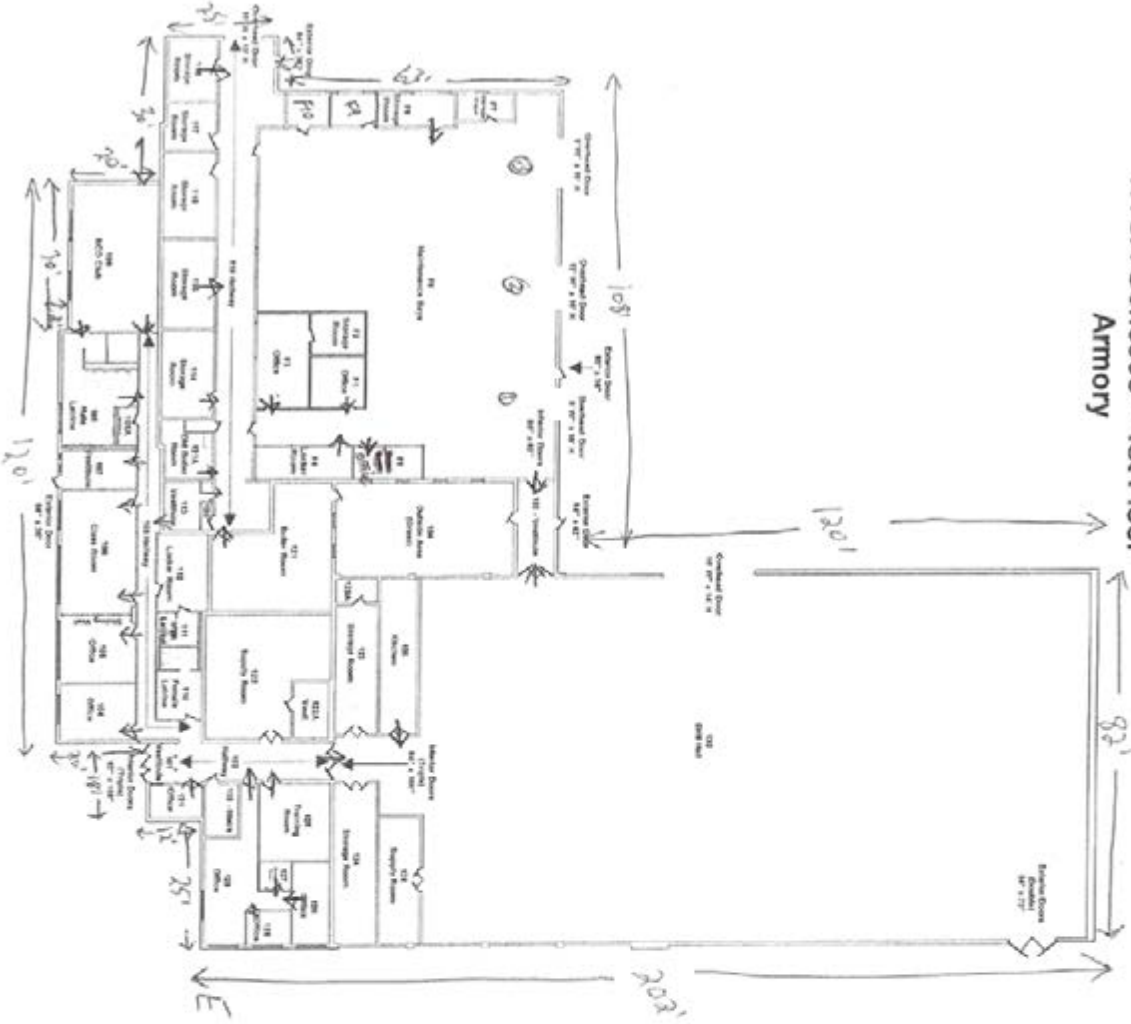
NYSA Geneseo – Basement



Basement Rooms

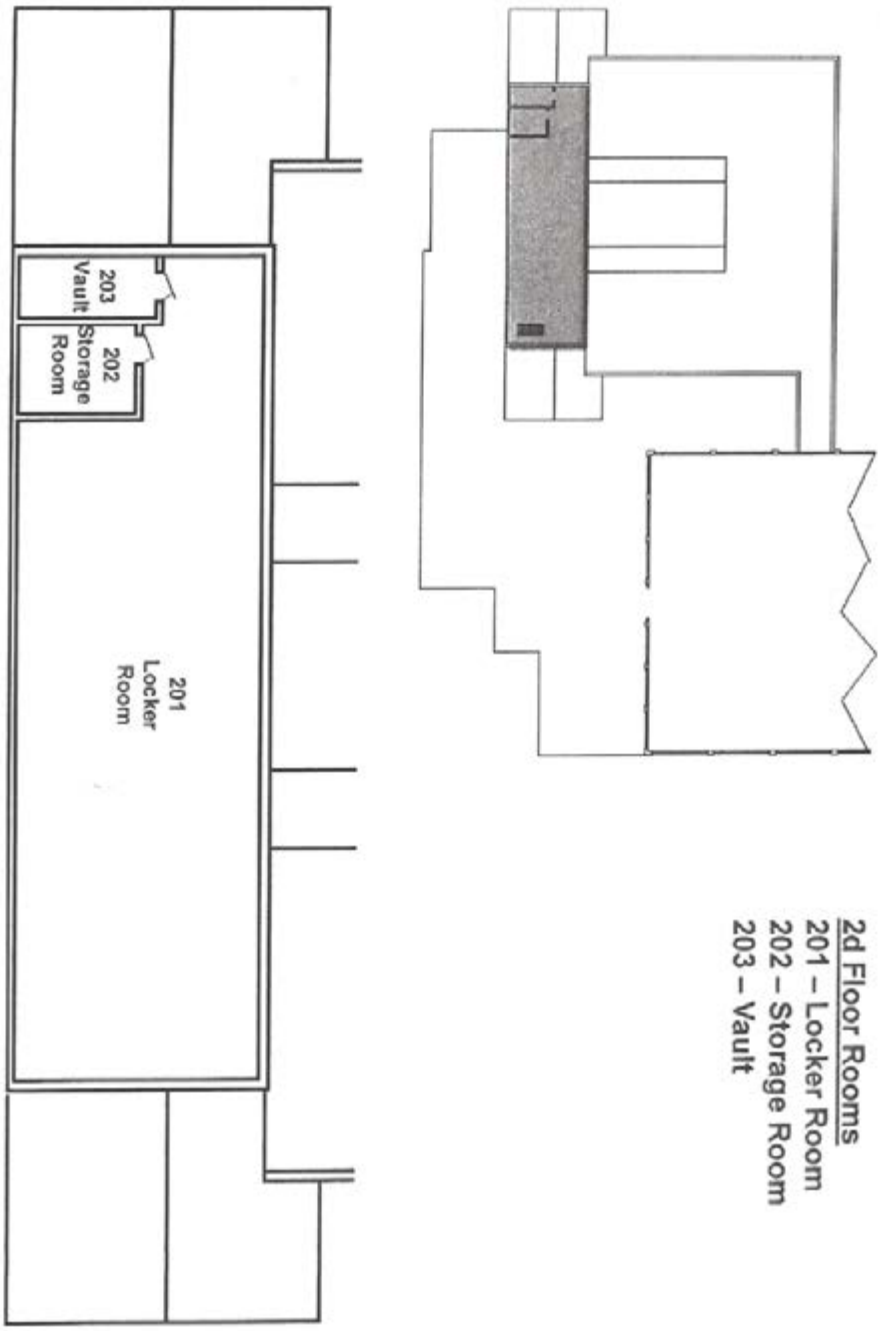
B1 – Basement Interior Stairs
B2 – Hallway
B3 – Weight Room / Storage
B4 – Storage Room
B5 – Training Room
B6 – Pipe Chase

NYSA Geneseo – 1st Floor
Armory



1st Floor Rooms
101 – Vestibule
102 – Hallway
103 – Hallway
104 – Office
105 – Office
106 – Class Room
107 – Vestibule
108 – Male Latrine
108A – Janitor's Closet
109 – NCO Club
110 – Female Latrine
111 – Male Latrine
112 – Locker Room
113 – Vestibule
114 – Storage Room
115 – Storage Room
116 – Storage Room
117 – Storage Room
118 – Storage Room
119 – Hallway
120 – Storage Room
121 – Boiler Room
121A – Old Boiler Room
122 – Unit Supply Room
122A – AASE Vault
123 – Storage Room
123A – Storage Room
124 – State Storage Room
125 – Training Room
126 – Office
127 – Telecommunications Room
128 – Office
129 – Office
130 – Stairs to Basement
131 – State Office
132 – Drill Hall
133 – Vestibule
134 – Outside Area
135 – Kitchen
136 – Supply Room

Maintenance Shop Rooms
F1 – Office
F2 – Storage Room
F3 – Office
F4 – Storage Room
F5 – Breakroom Office
F6 – Maintenance Bays
F7 – Storage Room
F8 – Storage Room
F9 – Storage Room
F10 – Storage Room



Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Geneseo RC	**Chain Of Custody:**	514681
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	34 Avon Road, Geneseo, NY 14454-1002	**Date Submitted:**	12/4/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	12/13/2012 **Report Date:** 12/17/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13019670	GeneseoRC-PC-1	Flame	Paint Chip	****	N/A	0.0067	%Pb		<0.0067	%Pb	
13019671	GeneseoRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13019672	GeneseoRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	33	300	ug/ft²	
13019673	GeneseoRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	27	240	ug/ft²	
13019674	GeneseoRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	41	360	ug/ft²	
13019675	GeneseoRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	860	7700	ug/ft²	
13019676	GeneseoRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	14	130	ug/ft²	
13019677	GeneseoRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	42	380	ug/ft²	
13019678	GeneseoRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019679	GeneseoRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	110	1000	ug/ft²	
13019680	GeneseoRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	16	140	ug/ft²	
13019681	GeneseoRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	25	220	ug/ft²	
13019682	GeneseoRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019683	GeneseoRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

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4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlab.org
EAR #100470

Client:	National Guard Bureau	Job Name:	Genesco RC	Chain Of Custody:	514681
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	34 Avon Road, Genesco, NY 14454-1002	Date Submitted:	12/4/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	12/13/2012 Report Date: 12/17/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Non-Responsive

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Non-Responsive

Technical Mana

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AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514681

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Genesee RC
2. Job Location: 34 Avon Rd, Geneseo NY 14454-1002
3. Job #: [illegible] W912K6-09-A-0003
4. Contact Per: Non-Responsive @ phone #:
5. Submitted b: [illegible] ture: Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and Email/Fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	☒ Include C Non-Responsive h Report
❑ 24 Hours Time Due:	❑ Next Day ☒ 5 Day +	☒ Email: [redacted] bonusenvironmental.com
Comments:	❑ 2 Day Date Due: 4/4/12	☒ Fax: s .us.army.mil
	❑ Results Required By Noon	☒ Verbals: [redacted] .us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☒ NIOSH 7400 3 (QTY)
❑ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 2 (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)

MISC
❑ Vermiculite
❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)

TEM Dust*
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
TEM Water samples °C)

Metals Analysis
☒ Pb Paint Chip 1 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 13 (QTY)
❑ *Pb Air (QTY)
❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ *Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ *Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ *Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION / SAMPLE LOCATION/ID	DATE/ TIME	VOL (L/ Wipe Area)	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
Genesee RC-PC-1	Rm 107	11-26	—				*			*						Date/Time: Contact: By:
Genesee RC-ASB-1	Rm 107	1	—			*				*						
Genesee RC-ASB-2	Hallway	1	—			*				*						
* SEE ATTACHED FIELD DATA SHEETS		*					*				*					
Genesee RC-ASB-Air-1	Field Blank	1	Ø		*				*							Date/Time: Contact: By:
Genesee RC-ASB-Air-2	Field Blank	1	Ø		*				*							
Genesee RC-ASB-Air-3	Hallway	↓	450		*				*							
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 4/4/12 @ 1000 Via: Fedex By:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

Surface Sampling Field Data Sheet

Date Collected: 11/26/12
Job Number: 1061-15
Contact P: Non-Responsive
Job Name: Geneseo RC
Job Location:
Address: 34 Avon Rd
Geneseo, NY 14454-1102
Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Geneseo RC-LW-1	Field Blank	—	—	Ghost Wipe
Geneseo RC-LW-2	Drill Hall	On floor, South end	4" x 4"	
Geneseo RC-LW-3	Drill Hall	On floor, North end		
Geneseo RC-LW-4	Drill Hall	On top of Amnesty Box		
Geneseo RC-LW-5	Drill Hall	On top of Control Panel Box #4		
Geneseo RC-LW-6	Drill Hall	On top of table		
Geneseo RC-LW-7	Maintenance Bay 1	On top of Storage Shelf		
Geneseo RC-LW-8	Locker Rm	On top of locker #6		
Geneseo RC-LW-9	Motor Vehicle Storage Bldg	on floor, Center		
Geneseo RC-LW-10	Kitchen	On top of Refrigerator		
Geneseo RC-LW-11	Training Rm, Former Indoor Firing Range	On floor, Bullet Trap Area		
Geneseo RC-LW-12	Training Rm, Former Indoor Firing Range	On Ventilation Grill		
Geneseo RC-LW-13	Training Rm, Former Indoor Firing Range	On light fixture	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Asbestos Sample Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	Job Name:	Geneseo RC	Chain Of Custody:	514681
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	34 Avon Road, Geneseo, NY 14454-1002	Date Analyzed:	12/11/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13019687	GeneseoRC-ASB-1 PL	NAD	--	--	--	--	--	--	--	--	--	100	PL	White	Homogeneous	SW	
13019688	GeneseoRC-ASB-1 BC	NAD	--	--	--	--	--	--	--	--	--	100	BC	Gray	Homogeneous	SW	
13019689	GeneseoRC-ASB-2	NAD	--	--	--	--	--	--	60	TR	--	40	PI	Brown	Homogeneous	SW	

NVLAP (101143-0) Accredited Laboratory

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	Job Name:	Geneseo RC	Chain Of Custody:	514681
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	34 Avon Road, Geneseo, NY 14454-1002	Date Analyzed:	12/11/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director Non-Responsive

Analyst(s) Non-Responsive

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Bulk Sampling Survey Sheet

Page 1 of 1

Date Collected: 11-26-12
Job Number: 1061-15
Contact Person: [redacted]

Job Name: Geneseo RC
Job Location:
Address: 34 Avon Rd
Geneseo, NY 14454

Company: [illegible] Environmental, LLC
Phone Number: 989-779-7686
Collected By: [redacted]
COC Number:

Sample Number	Homogenous Area ID	Type of Material	Sample Location	Friable	Condition of Material	Accessibility	Photo	Comments
GeneseoRC-ASB-1	Surfacing	Plaster	Rm 107, Former Kitchen	☒ Yes ☐ No ☐ Potentially	☐ Good ☒ Fair ☐ Poor	☐ Low ☐ Medium ☒ High	☒ Yes ☐ No	
GeneseoRC-ASB-2	TSI	Pipe Insulation	Hallway	☐ Yes ☒ No ☐ Potentially	☐ Good ☒ Fair ☐ Poor	☒ Low ☐ Medium ☐ High	☒ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514681

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Genesco RC
2. Job Location: 34 Avon Rd, Geneseo NY 14454-1003
3. Job #: 1061-15
4. Contact P[redacted] PO #: W912K8-09-A-0003
5. Submitted [redacted] @ phone #

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: [redacted] @bonussenvironmental.com
Comments:	☐ 2 Day Date Due:	☒ Fax: [redacted] @us.army.mil
	☐ Results Required By Noon	☒ Verbals: [redacted] @us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☒ NIOSH 7400 3 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Grav) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that blanks samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
TEM Water samples °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 1 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 13 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
Genesco RC-PL-1	Rm 107	11-21	1				✱			✱					
Genesco RC-ASB-1	Rm 107	1	1			✱				✱					
Genesco RC-ASB-2	Hallway	1	1			✱				✱					
✱ SEE ATTACHED FIELD DATA SHEETS		✱					✱				✱				
Genesco RC-ASB-Air-1	Field Blank	1	Ø		✱				✱						
Genesco RC-ASB-Air-2	Field Blank	1	Ø		✱				✱						
Genesco RC-ASB-Air-3	Hallway	✓	450		✱				✱						

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time: Contact: By:

Date/Time: Contact: By:

Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 12/4/15 @ 1000 Via: FedEx By: [redacted]
2. Date/Time Analyzed: 12/11/15 @ [redacted] By (Print): Surv
3. Results Reported [redacted] Via: Email Date: 12/11/15 Time: Initials: SW
4. Comments:

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD, ENVIRONMENTAL MICROBIOLOGY ISO/IEC 17025:2005 www.aihaaccreditedlabs.org LAB #100470

Client:	National Guard Bureau	Job Name:	Geneseo RC	Chain Of Custody:	514681		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	34 Avon Road Geneseo, NY 14454-1002	Date Submitted:	12/4/2012		
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	[redacted]		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	12/11/2012	Report Date:	12/11/2012
Attention:	[redacted]			Date Sampled:	Not Provided		

Summary of Phase Contrast Microscopy

Page 1 of 1

AMA Sample Number	Client Sample Number	Volume Sampled (Liters)	Fibers Per Millimeter Squared	Fibers Per Cubic Centimeter	Analyst I.D.	Sample Type	Comments
13019684	GeneseoRC-ASB-Air-1	0	<7*	*****	RP	BLK	0 fiber(s) per 100 fields
13019685	GeneseoRC-ASB-Air-2	0	<7*	*****	RP	BLK	0 fiber(s) per 100 fields
13019686	GeneseoRC-ASB-Air-3	450	<7*	<0.006*	RP	AREA	

* The Reporting Limit for AMA Laboratory is 7.0 fibers per square millimeter of filter. The reporting limit for the air concentration of fibers (f/cc) is dependent on the sampled air volume. Fibers counts were determined by the methods described in NIOSH Analytical Method 7400, 'Fibers' (Revision 3, Issue 2, 8/15/94). All personnel samples were analyzed following the OSHA Reference Method.

Note: All samples were received in good condition unless otherwise noted.

Uncertainty: for fibers/mm² in the range of 7-25 the SR is 0.253, 26-64 SR=0.256, 64-127 SR=0.344, >127 SR=0.147

Sample results shown here have been corrected for any field blank(s) submitted with this sample set.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director [redacted]

Anal[redacted]

An AIHA (#100470) Accredited Laboratory

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Air Sampling Field Data Sheet

Page 1 of 1

Date Collected: 11-26-18
Job Number: 1061-15
Contact Person:

Job Name: Genesco RC
Job Location:
Address: 34 Avon Rd
Genesco NY 14454

Company: Bonus Environmental LLC
Phone Number: 989-779-7686
Collected By: [redacted]
COC Number:

Sample Number	Sample Type (PLM, DWA, FC, ENV, PER, AMB, BLK, etc.)	Sample Location	Sampling Pump Data					Comments (for mold samples, must indicate sampling apparatus and/or collection media)
			Time On	Time Off	Total Min.	Flow Rate LPM	Volume L	
Genesco RC-ASB-Air-1	FB	Field Blank	–	–	0	0	0	
Genesco RC-ASB-Air-2	FB	Field Blank	–	–	0	0	0	
Genesco RC-ASB-Air-3	GA	Hallway	0931	1316	225	2.0	450	

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Appendix D

Photographs

Building exterior, looking southeast

Drill Hall, looking south

Kitchen

Maintenance Bays 1-3, looking east

Maintenance Bay 1, emergency shower

Training room, (former indoor firing range)

Room 107, peeling white paint and water-damaged plaster wall

Boiler room

Hallway, damaged pipe insulation

Hallway, flammables cabinet

Motor vehicle storage building exterior, looking northeast

Motor vehicle storage building interior, looking north

Appendix E

References

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 Jan 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

Consolidated Safety Services

The New York State Readiness Center
Geneva, New York 14456

Submitted to:

National Guard Region North
Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

NATIONAL GUARD READINESS CENTER
INDUSTRIAL HYGIENE EVALUATION

Consolidated Safety Services, Inc.
10301 Democracy Lane, Suite 300
Fairfax, Virginia 22030
703-691-4612
703-691-4615 Facsimile
800-888-4612 Toll free
www.consolidatedsafety.com

The New York State Readiness Center
Geneva, New York

Industrial Hygiene Evaluation

Prepared for:

National Guard Region North Industrial Hygiene Office
Havre de Grace, Maryland 21078

Prepared by:

Consolidated Safety Services, Inc.
10301 Democracy Lane, Suite 300
Fairfax, Virginia 22030

September 8, 2008

Prepared by: _____

Non-Responsive
Industrial Hygienist

Reviewed by: _____

Non-Responsive, CIH, CSP
Senior Project Manager, EHS

TABLE OF CONTENTS

Tables

Appendices

1. EXECUTIVE SUMMARY

Consolidated Safety Services, Inc. (CSS) was contracted by the U.S. Army National Guard to perform an industrial hygiene evaluation at the Geneva New York State Readiness Center located at 300 Main Street, in Geneva, New York. Non-Responsive performed the evaluation on September 8, 2008. The point of contact for the facility was Mr. Non-Responsive, Maintenance Assistant. The purpose of the evaluation was to assess industrial hygiene concerns in the facility, evaluate workers' personal exposures, and review industrial hygiene and safety programs.

The following industrial hygiene and safety programs were evaluated during the site visit: confined space, hearing conservation, respiratory protection, hazard communication (HAZCOM), and personal protective equipment (PPE).

The following industrial hygiene concerns were evaluated during the site visit:

- Noise exposure;
- Illumination;
- Deteriorated suspect lead-based paints;
- Damaged suspect asbestos-containing materials;
- Water damage and possible mold growth;
- General housekeeping;
- Indoor air quality; and
- Ergonomics.

There were several industrial hygiene concerns identified during the assessment. The Risk Assessment Code (RAC) is presented for each identified concern or deficiency:

- There was visual evidence of minor water damage to a wall and two ceilings within the facility. There was no evidence of suspect mold growth identified in the facility. The sources of the water intrusion should be identified and corrected and water-damaged ceiling tiles should be replaced to minimize the potential for mold growth. (**RAC 4**). **29 CFR 1960.8a**

- There are several locations where the measured illuminance levels are below those recommended by the Illuminating Engineering Society of North America. Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels (**RAC 4**). **ANSI/IESNA RP-1-04 (Office Lighting) and ANSI ANSI/IESNA RP-7-01 (Lighting Industrial Facilities)**

- Asbestos-containing brown floor tile with white and blacks flecks was identified in Room 9 (Cammo Room). Asbestos-containing brown floor tile with white flecks was identified in Room 21 (First Sergeant's Office). Overall, the material was in good condition with a few areas of

minor, isolated damage. It is recommended that a detailed operation and maintenance (O&M) plan be developed to insure that the condition of the floor tile is maintained in good condition. Housekeeping and maintenance personnel should be advised of the presence of the suspect asbestos-containing material (**RAC 4**). **29 CFR 1910.1001(j)(7)(iv)** and **29 CFR 1960.8a**

- Housekeeping was good overall throughout the facility, with the exception of a phone cord that presents a trip hazard in Room 17 (Commander's Office). A cord protector should be placed over the cord to prevent the trip hazard or the phone should be relocated so the cord is not required to extend across a walkway. (**RAC 3**) **29 CFR 1910.22(b)(1)**

- There are two locations (three samples) where lead dust wipe samples were above the NGB Region North IH Office limit of 200 micrograms/square foot (µg/ft^2). These areas should be cleaned to eliminate the lead dust contamination. Anyone that may perform work in this area, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust (**RAC 4**). **NGB Region North IH Office limit of 200 micrograms/square foot (µg/ft^2)**

- Detectable levels of lead were found in all seven paint chip samples collected and therefore considered to be lead-containing paint. OSHA requires that precautions be taken when lead is present, but does not define a threshold below which no action is required. Therefore, anyone that may perform repair or maintenance activities to any surfaces in these areas must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead-based paint. The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. There are three locations where peeling paint samples contained levels of lead that were above the HUD criteria of 0.5% lead by weight. (**RAC 4**). **Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62 and Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing**

2. INTRODUCTION

Consolidated Safety Services, Inc. (CSS) contracted with the U.S. Army National Guard (USARNG) to perform an industrial hygiene evaluation at the Geneva New York State Readiness Center at 300 Main Street in Geneva, New York. Non-Responsive performed the evaluation on September 8, 2008. The point of contact for the facility was Mr. Non-Responsive, Maintenance Assistant. The purpose of the evaluation was to review industrial hygiene and safety programs, evaluate potential exposures to physical and chemical hazards, and evaluate exposure control strategies and equipment. The building was visually inspected and evaluated for: damaged suspect asbestos-containing materials (ACM), water-damaged building materials, possible mold growth, housekeeping, deteriorated suspect lead-based paints, and poor indoor air quality.

The Geneva New York State Readiness Center currently has one unit assigned to the facility: Troop A 2-101 Calvary. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations. The building that houses the Geneva New York State Readiness Center was constructed in 1892 and consists of multiple offices, a kitchen, a mess hall, break rooms, men's and women's restrooms, a locker room, supply areas, a garage, and a drill hall. The garage is only used for parking and storage; no maintenance activities are performed in the garage.

The findings, discussion and interpretation of results are provided in Section 4 through Section 8. The conclusions are provided in Section 9. A diagram of the building layout is provided in Appendix A. Sampling sheets and laboratory results for Lead Paint, Lead in Air, and Lead dust are provided in Appendix B. Selected photographs taken during the evaluation are provided in Appendix C. An explanation of how the Risk Assessment Code (RAC) was determined is located in Appendix D. A list of references used during the evaluation is provided in Appendix E.

This report is for the sole use of the USARNG. The results presented in this report are only indicative of conditions during the time of the evaluation. This evaluation does not purport to include all occupational hazards at this facility, and only those areas and exposures specifically mentioned were evaluated.

3. EVALUATION METHODS

3.1 *Noise Survey*

Sound pressure levels were measured using a Larson Davis Spark noise dosimeter model # 706RC and serial #17309. The noise dosimeter was factory calibrated May 15, 2008.

3.2 *Illumination*

Illumination measurements were taken using a Cal-Light 400, calibrated on June 17, 2008, and compared to the American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

3.3 *Indoor Air Quality Measurements*

Indoor air quality parameters (i.e., carbon dioxide concentration, carbon monoxide concentration, temperature and relative humidity) were measured using a TSI Q-Trak Plus Model 8554, calibrated in February 2008. Carbon dioxide, temperature and relative humidity measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). CO levels were compared to Occupational Safety and Health Administration Permissible Exposure Limit, the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for CO.

4. OPERATIONS DESCRIPTIONS

4.1 *Facility Operations*

There is currently one unit assigned to the facility: Troop A 2-101 Calvary. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations.

4.1.a. Noise Measurements

A sound level survey was performed to determine if there were any hazardous noise areas at the facility that could possibly result in exposures to personnel in excess of the Permissible Noise Dose. Sound pressure levels were measured throughout the facility. Measurements ranged from 59 dBA to 76 dBA within the facility. Exposure to sound pressure levels of this magnitude would not result in exposures equal to or in excess of the Permissible Noise Dose over an eight hour period.

4.1.b. Lighting Survey

Illumination levels were measured in all areas within the facility. The measurements indicate that several areas did not meet the illuminance levels recommended by the Illuminating Engineering Society of North America. The measurement results are presented in Table 1.

4.1.c. Additional Information

N/A

4.1.d. Recommendations

Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels.

5. PHYSICAL CONDITION OF THE FACILITY

5.1 *Visual Inspection – Peeling Paint – Lead*

A visual inspection was performed to determine if any areas of peeling or deteriorated paint at the facility could pose a lead exposure hazard. There were seven areas identified where paint was peeling and may result in a potential exposure hazard. These areas include the drill hall, Room 11 (Supply Room), Room 21 (First Sergeant's Office), Room 1 (office), Room 35 (mess supply room), Room 41 (Locker Room), and Room 46 (kitchen). Seven paint chip samples were collected and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) Method 7420.

The results, presented in Table 3, indicated detectable levels of lead in all of the samples collected. The paint is therefore considered to be lead-containing paint. All construction activities that involve lead-containing coatings are regulated by the Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62. The standard currently does not define a specific concentration of lead, which must be present within paint for it to be considered "lead-containing." Therefore, painted and glazed surfaces that contain detectable concentrations of lead must be handled in accordance with the OSHA Lead in Construction Standard. Any contractor performing work that could impact paint films or glazing that have detectable concentrations of lead must be informed of the testing results, and must take appropriate actions to comply with OSHA Standard 29 CFR 1926.62. These appropriate actions include performing air monitoring to measure worker exposure; assuring that the workers are provided with adequate respiratory protection; and assuring that workers are provided with appropriate training.

The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. The peeling yellow paint in the Drill Hall, the peeling blue paint in Room 1 (Office), and the peeling blue paint in Room 46 (Kitchen) contained more than 0.5% lead by weight and are therefore considered lead-based paint.

5.2 *Visual Inspection – Dust – Lead*

Due to concerns with lead contamination, wipe samples were collected from various surfaces throughout the facility. Nineteen samples were collected from the walls, floors, and other surfaces. The samples were collected using "Ghost Wipes" using the prescribed NIOSH method for conducting surface wipe samples. The samples were collected and placed in new plastic containers and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) 600/R-93/200 Lead in Surface Wipe Samples. The results for the wipe samples, presented in Appendix B indicate that there were three samples from the Firing Range and Drill Hall that were above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). It is recommended that signage be posted in the Firing Range warning of the lead hazard. Each of the other areas should be cleaned to eliminate the lead dust contamination. Anyone that may perform work in these areas, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust.

5.3 *Visual Inspection – Asbestos*

A visual inspection was performed to determine if there was any suspect asbestos-containing material (ACM) at the facility and its condition. There was approximately 300 square feet (ft^2) of 9 inch x 9 inch brown floor tile with black and white flecks, identified in Room #9 (Cammo Room). There was also approximately 250 ft^2 of 9 x 9 inch brown tile with white flecks, identified in Room #21 (First Sergeant's Office). Overall, the material was in good condition with a few areas of minor, isolated damage. Two samples of floor tile were collected and submitted to AMA Analytical Services, Inc., to be analyzed by Polarized Light Microscopy (PLM) and Transmission Electron Microscopy (TEM), to determine if the tiles are asbestos-containing. The result of the samples, presented in Table 4, indicate that the floor tile is asbestos-containing. It is recommended that anyone conducting work on any asbestos-containing material or presumed asbestos-containing material be made aware of the asbestos and the appropriate precautions be taken to minimize exposures. The condition of the floor tile should be monitored on a routine basis to insure that the materials are not damaged.

5.4 *Visual Inspection – Water Damage and Mold Growth*

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. There was no evidence of mold growth, but some evidence of minor water damage to the ceiling in Room #8 (Supply Office) and Room #35 (Mess Supply Room). Minor water damage was also noted on the wall of Room #21 (First Sergeant's Office). The sources of the water intrusion should be identified and corrected and water-damaged ceiling tiles should be replaced to minimize the potential for mold growth.

5.5 *Visual Inspection – Housekeeping*

A visual inspection was performed to assess the state of housekeeping in the facility. Housekeeping was good overall, with the exception of a phone cord extending across a walkway that presents a trip hazard in Room #17 (Commander's Office). It is recommended to relocate the phone so the cord does not extend across a walkway or place a cord protector over this cord to eliminate the trip hazard.

6. BUILDING CONCERNS

6.1 *Ergonomic Concerns*

Interviews of employees were conducted and observations made to determine if there were work activities that result in any ergonomic concerns in the facility. No ergonomic concerns were identified.

6.2 *Illumination Issue*

Illumination levels were measured in all areas of the facility and the results indicate that some illuminance levels do not meet the levels recommended by the Illuminating Engineering Society of North America. The measurements ranged from a low of 2 foot candles (fc) to a high of 78 (fc). The complete results of the evaluation can be found in Table 1, including whether or not the measured levels met ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities) recommendations for illumination.

6.3 *Indoor Air Quality (IAQ)*

Temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) were evaluated in the facility and compared with recognized "comfort factors." Currently, there are no enforceable regulatory IAQ standards. However, ASHRAE defines acceptable IAQ as air (1) in which there are no known contaminants at harmful levels, as determined by cognizant authorities, and (2) about which a substantial majority (80% or more) of the people exposed do not express dissatisfaction. ASHRAE Standard 62.1-2007, "Ventilation for Acceptable Indoor Air Quality," represents the state-of-the-art in ventilation design requirements for commercial, institutional, and residential buildings. It was developed "to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to minimize the potential for adverse health effects." The standard also considers chemical, physical, and biological contaminants and other factors that impact IAQ and affect occupant health and comfort.

A digital IAQ meter (TSI Q-Trak Plus, model #8554) was used to collect temperature, relative humidity, CO_2, and CO measurements in several areas throughout the facility. Results are provided in Table 2. These measurements were compared with current ASHRAE consensus standards and were found to be within acceptable limits.

The facility is not climate controlled and the windows were open during the survey. As a result, the readings collected indoors during this survey were greatly influenced by outdoor conditions. The levels found may be considerably different during times of the year when the windows remain closed.

6.3.a. Carbon Dioxide (CO_2)

Building occupants generate CO_2 as a product of respiration. Concentrations of CO_2 are often used during indoor air quality investigations to determine the effectiveness of ventilation systems in removing common indoor pollutants. The indoor CO_2 concentration will increase in a given space with fixed ventilation output in proportion to the number of building occupants and their activity level. ASHRAE Standard 62.1-2004 uses CO_2 as a surrogate indicator of building ventilation; namely, an indoor-outdoor CO_2 concentration differential of less than 700 parts per million (ppm) is considered to indicate adequate ventilation. This level is not considered an indication of a health risk, but rather an indicator for human comfort.

Indoor levels of CO_2 ranged from 370 parts per million (ppm) in the Drill Hall to 590 ppm in Room 47 (NCO Club Room). Outdoor CO_2 levels were approximately 340 ppm during the monitored period.

The indoor CO_2 levels were less than 1040 ppm (the outdoor CO_2 levels plus 700 ppm), which indicates adequate ventilation.

6.3.b. Carbon Monoxide (CO)

The Occupational Safety and Health Administration has established a Permissible Exposure Limit for carbon monoxide of 50 parts per million (ppm) averaged over an eight-hour work day. Similarly, the American Conference of Governmental Industrial Hygienists has established a Threshold Limit Value of 25 ppm averaged over an eight-hour work day. The National Ambient Air Quality Standard (NAAQS) recommended for ambient CO is below 9 ppm over an eight-hour work day. The CO measurements in the facility were less than 1 ppm. These levels are well below established occupational exposure limits and CO does not present a hazard to employees at this facility.

6.3.c. Temperature

Indoor temperature measurements in the facility ranged from 70°F in the Drill Hall to 77°F in the Attic. These temperatures will not give rise to heat or cold stress and are close to the range recommended by ASHRAE. They are therefore considered acceptable.

6.3.d. Relative Humidity

Indoor relative humidity (RH) measurements ranged from 50% in Room 22 (Administration Offices) to 70% in Room 47 (NCO Club Room). Some of the relative humidity readings were above 60%, the level above which the potential for microbial growth increases. No suspect mold growth was noted. The results of the measurements indicate that employees were not exposed to temperature or humidity levels at the time of the survey that could give rise to heat- or cold-induced injuries.

6.3.e. Lead Air Sampling

Due to concerns with lead contamination, air samples were collected from two areas in the facility; Room 22 (Administration Offices) and Room 5 (Recruiter's Office). The samples were collected using SKC brand personal sampling pumps with the appropriate sampling media. Pumps were calibrated both before and after use with a Dry-Cal calibrator, which is considered a primary standard. General area samples were collected as close to breathing zone height as could be achieved. Samples were collected for 387 and 390 minutes, resulting in a sampled volume of 774 and 780 liters of air, respectively. The samples were shipped to AMA Analytical Services, Inc. and Analysis was conducted in accordance with the Environmental Protection Agency (EPA) 600/R-93/200 Lead in Air Samples. Both air samples were below the OSHA PEL and ACGIH TLV of 50 $\mu g/m^3$ as an 8 Hour time weighted average (TWA). The results from the air samples collected over the 6.5 hour period were compared directly to the OSHA PEL, which is based on an 8-hour Time-Weighted Average, because the airborne concentration of lead is not expected to change in the office areas sampled.

Results as reported by the laboratory are included in Appendix B.

7. INDUSTRIAL HYGIENE AND SAFETY PROGRAMS

An evaluation was performed to determine the applicability of the following programs:

- Confined Space;
- Hearing Conservation;
- Respiratory Protection;
- Hazard Communication (HAZCOM); and
- Personal Protective Equipment (PPE).

It was determined that all industrial hygiene and safety programs are managed at the unit level and there are no specific facility based programs; therefore, no programs were reviewed for the facility. The attached garage is only used for parking and storage; no maintenance activities are performed in the attached garage. According to the Maintenance Assistant, all facility employees are required to attend an annual safety class which includes a review of PPE standards, chemical inventory, asbestos awareness training, and hazardous assessment.

8. VEHICLE, EQUIPMENT AND HAZARDOUS MATERIALS LIST

The use of the items on the equipment and hazardous materials lists were evaluated and it appears that all the items are used at the facility. The Material Safety Data Sheets (MSDS) were in order and all chemicals found in the facility were listed in the materials list (or chemical inventory) at the beginning of the MSDS notebook. According to the Maintenance Assistant there is one FMTV and one Hummer assigned to the facility.

9. CONCLUSION

Industrial hygiene concerns associated with some minor water damage to a wall and two ceilings were identified at the facility. Illumination levels were low in some areas of the facility. Three lead dust wipe samples were above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). Detectable levels of lead were found in seven lead paint chip samples. One minor housekeeping problem was identified. Asbestos containing floor tiles were identified in two locations. These concerns are discussed in Sections 4 through Section 8.

Tables

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Table 1. Illumination Measurements
The New York State Readiness Center
Geneva, New York
Date of Sampling: September 8, 2008

Location	Luminance (fc)[1]	Standard (fc)	Standard Met (Y/N)
Basement			
Room 32 Mess Hall	60 – 78	30	Y
Room 33 Men's Room	3 – 15	7	N
Room 34 Janitor Closet	2	7	N
Room 35 Mess Supply	10 – 30	30	N
Room 37 Training Room	20 – 28	30	N
Room 38	32	30	Y
Room 40	2 – 32	30	N
Room 41	25	30	Y
Room 42 Boiler Room	23 – 27	30	N
Room 45 Garage Storage	20 – 35	5	Y
Room 46 Kitchen	43 – 56	50	N
Room 47 NCO Club Room	26 - 32	30	N
Basement Hallway	21 – 25	7	Y
First Floor			
Attached Garage	28 – 46	75	N
Drill Hall	18 – 25	30	N
Room 1 Office	38 – 40	50	N
Room 2 Support Office	48 – 49	30	Y
Room 6 Day Room	18 – 34	30	N
Room 7	45 – 48	30	Y
Room 8 Supply Office	48	30	Y
Room 9 Cammo Room	38 – 41	30	Y
Room 11 Supply	28 – 32	30	N
Room 12 Med Room	11 – 15	30	N
Room 13 Push-up Room	17 – 18	30	N
Room 14	28	30	N
Room 15 NBC Room	28	30	Y

Table 1. Illumination Measurements
The New York State Readiness Center
Geneva, New York
Date of Sampling: September 8, 2008

Location	Luminance (fc)[1]	Standard (fc)	Standard Met (Y/N)
Room 16 Arms Room	27 - 28	30	N
Second Floor			
Room 17 Commander's Office	36 – 37	50	N
Room 18 Locker Room	36 – 39	7	Y
Room 19 Bathroom	74	7	Y
Room 20	28 – 33	30	N
Room 21 First Sergeant's Office	35 – 40	50	N
Room 22 Admin Offices	22 – 35	30	N
Room 23 Training Offices	28 – 30	30	N
Room 24	25 - 30	30	N
Second Floor Hallway	15 - 35	7	Y
Third Floor			
Attic Storage	9 - 41	5	Y

[1] fc = foot candles

The readings were taken with a Cal-Light 400, factory calibrated on June 17, 2008.

The standards listed in Table 1 are from ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities)

Table 2. Indoor Air Quality Measurements
The New York State Readiness Center
Geneva, New York
Date of Sampling: September 8, 2008

Location	Occupants Present in Area	CO_2 (ppm)[1]	CO (ppm)	Relative Humidity (%)	Temperature (° F)
Basement					
Room 32 (Mess Hall)	2	480 – 560	<1	64 – 65	73 - 74
Room 47 (NCO Club Room)	2	480 – 590	<1	69 - 70	71 – 71.5
First Floor					
Drill Hall	2	370 – 380	<1	60 – 61	70 - 71
Room 2 (Support Office)	2	475 – 510	<1	60 – 61	72 - 73
Second Floor					
Administration Offices	2	520 – 560	<1	50 – 51	76 - 77
Attic					
Attic	1450 – 480	450 - 480	<1	58 – 59	76 - 77
Attached Garage					
Attached Garage	2	450 – 510	<1	55 – 56	74 - 75

CO_2, CO, relative humidity and temperature measurements were taken with a TSI Q-Trak Plus Model 8554, calibrated February 2008.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommendations that indoor CO_2 concentration be maintained at a level that is less than 700 ppm above outdoor concentration.

National Ambient Air Quality Standard (NAAQS) recommendation for ambient CO: below 9 ppm

Occupational Safety and Health Administration Permissible Exposure Limit for CO: 50 ppm as an 8-hour time-weighted average (TWA) concentration

American Conference of Governmental Industrial Hygienists Threshold Limit Value for CO: 25 ppm as an 8-hour time-weighted average (TWA) concentration

Table 3. Peeling Paint Chip Sample Results
The New York State Readiness Center
Geneva, New York
Date of Sampling: September 8, 2008

Sample Number	Location	Results (%)[1]
9082008-30	Drill Hall - peeling yellow paint from wall	5.4
9082008-31	Room 11 supply room – peeling blue paint on rear wall	0.093
9082008-32	Room 21 First Sergeant's Office – peeling white paint on wall	0.12
9082008-33	Room 1 (Office) – peeling blue paint on wall	5.7
9082008-34	Room 35 (Mess Supply) – peeling white paint on wall	0.16
9082008-35	Room 41 (Locker Room) – peeling white paint on wall	0.02
9082008-36	Room 46 (Kitchen) – blue peeling paint from kitchen wall	2.1

[1] Results cited as % lead by weight

The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight.

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 7420

Table 4.Lead Wipe Samples
New York State Readiness Center
Geneva, New York
Date of Sampling: September 8, 2008

Sample Number	Location	Sample Area[1]	Results (µg/ft²)[2]	NGB Standard (µg/ft²)[3]
9082008 - 01	Firing Range – bullet trap wall	12 in x 12 in	<12	<200
9082008 - 02	Firing Range – floor near bullet trap	12 in x 12 in	**290**	<200
9082008 - 03	Firing Range – storage pallet	12 in x 12 in	27	<200
9082008 – 04	Firing Range – floor near door	12 in x 12 in	**1100**	<200
9082008 – 05	Firing Range – light fixture	12 in x 12 in	56	<200
9082008 – 06	Drill Hall – left floor by wall and side door	12 in x 12 in	**420**	<200
9082008 – 07	Drill Hall – top of filing cabinet back wall	12 in x 12 in	<12	<200
9082008 – 08	Drill Hall – rear floor under bench	12 in x 12 in	84	<200
9082008 – 09	Drill Hall – ventilation unit on front right wall	12 in x 12 in	98	<200
9082008 – 10	Drill Hall – Front center wall	12 in x 12 in	<12	<200
9082008 – 11	Room 9 cammo room – rear floo	12 in x 12 in	180	<200
9082008 – 12	Room 2 support office – Office Desk	12 in x 12 in	<12	<200
9082008 – 13	Attached Garage – storage rack	12 in x 12 in	96	<200
9082008 – 14	Room 6 Day Room – radiator	12 in x 12 in	24	<200
9082008 – 15	Room 22 Administration Offices – top of filing cabinet	12 in x 12 in	<12	<200
9082008 – 16	Room # 21 First Sergeant's Office – floor	12 in x 12 in	<12	<200
9082008 – 17	Second Floor Hallway – floor	12 in x 12 in	12	<200
9082008 – 18	Floor outside firing range	12 in x 12 in	120	<200
9082008 - 19	Room 46 Kitchen – table top	12 in x 12 in	120	<200

1 Sample area was 12cm in x 12cm in with a total sample area of 144 in² or at total of 1 ft²

2 Results are presented as microgram per square feet (µg/ft²)

3 Standard is based on the NGB Region North IH office policy

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 600/R-93/200.

The sample results were compared to the NGB Region North IH Office Policy of maintaining <200 µg/ft2

Table 5.General Area Air Samples for Lead
New York State Readiness Center
Geneva, New York
Date of Sampling: September 8, 2008

Sample Number	Location	Sample Information			Results (ug/m³) [2]
		Time Sampled / Minutes	Flow Rate (lpm)[1]	Volume (liters)	
07112008-60	Room 22 (Administration Offices)	387	2	774	<3.9
07112008-61	Room 5 (Recruiter's Office)	390	2	780	<3.8
OSHA PEL (8-hour TWA)[4]					50
ACGIH TLV (8-hour TWA)[5]					50

The results from the air samples collected over the 6.5 hour period were compared directly to the OSHA PEL, which is based on an 8-hour Time-Weighted Average, because the airborne concentration of lead is not expected to change in the office areas sampled.

1 lpm = liters of air per minute

2 ug/m³ = micrograms per cubic meter

3 ND = Parameter not detected above LOD

4 U.S. Occupational Safety and Health Administration Permissible Exposure Limit (8-hour Time-Weighted Average)

5 American Conference of Governmental Industrial Hygienists Threshold Limit Value (8-hour Time-Weighted Average)

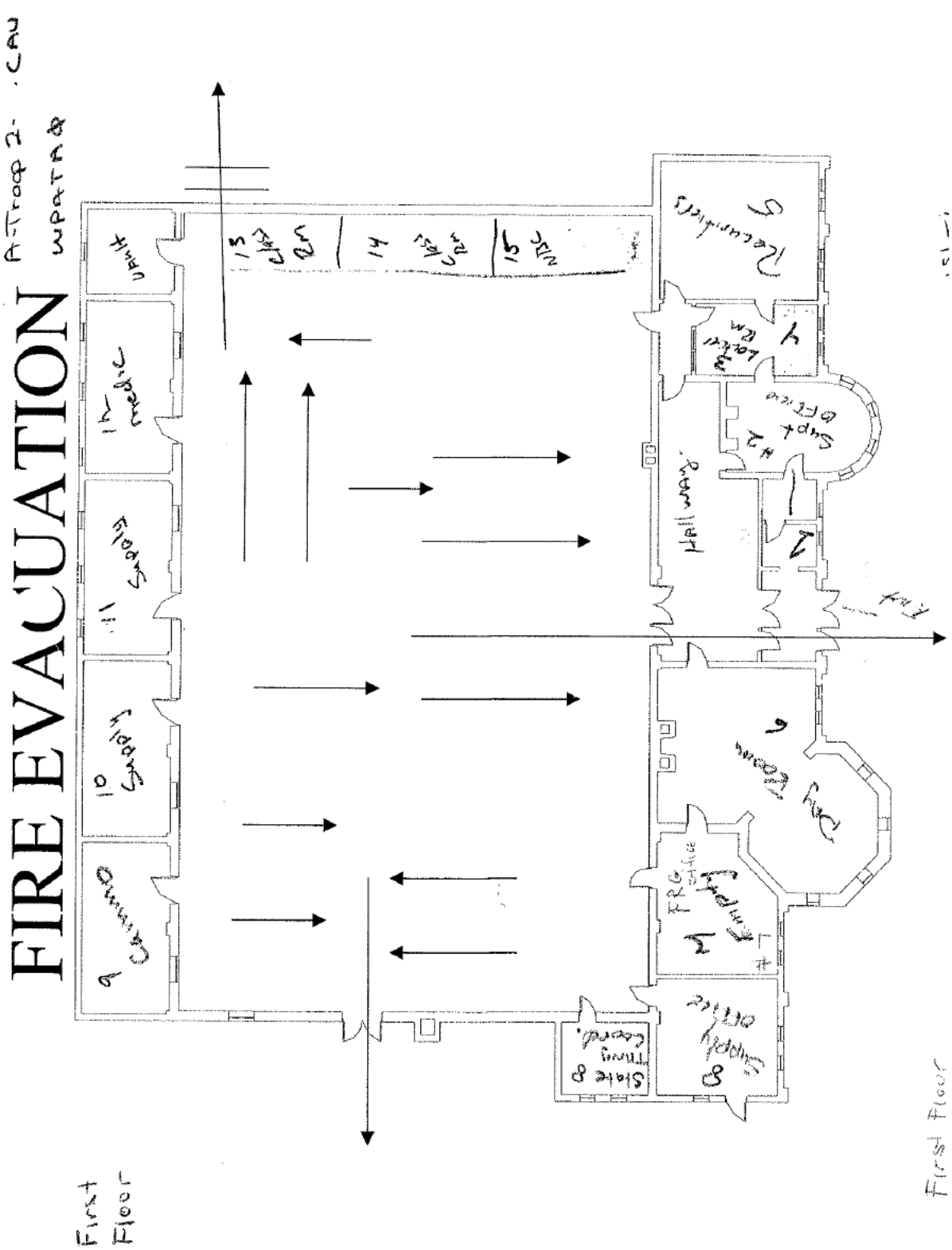
Table 6. Bulk Suspect Asbestos Containing Material (ACM) Samples
New York State Readiness Center
Geneva, New York
Date of Sampling: September 8, 2008

Sample Number	Location	Results (%)/Type[1]
9082008-80	9 in x 9 in brown floor tile with white and black flecks Room 9 (Cammo Room)	4% Chrysotile
9082008-81	9 in x 9 in brown floor tile with white flecks in Room 21 (First Sergeant's Office)	3% Chrysotile

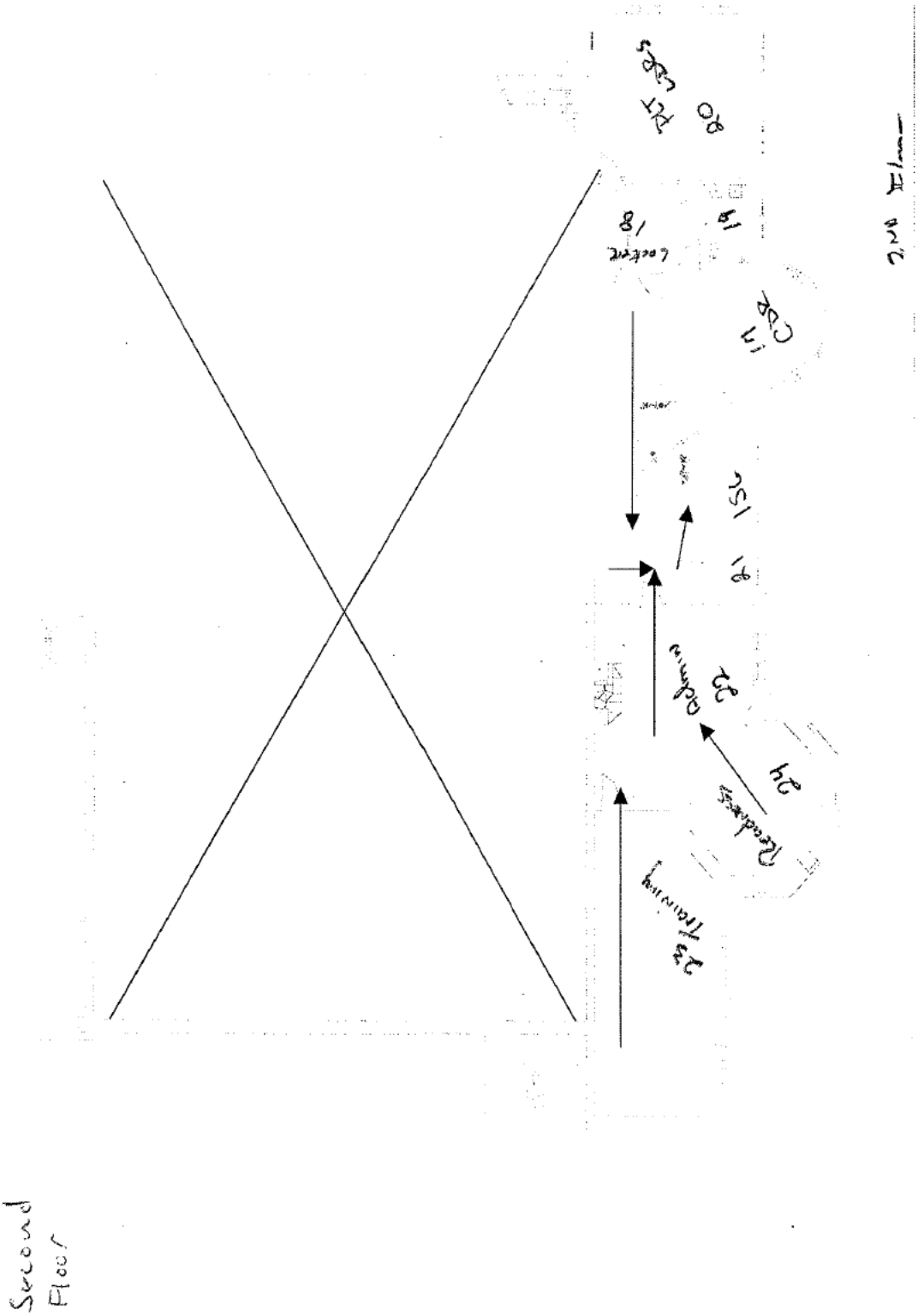
[1]Results cited as % asbestos

According to 29 CFR 1910.1001(b), Asbestos-containing material means any material containing more than 1% asbestos

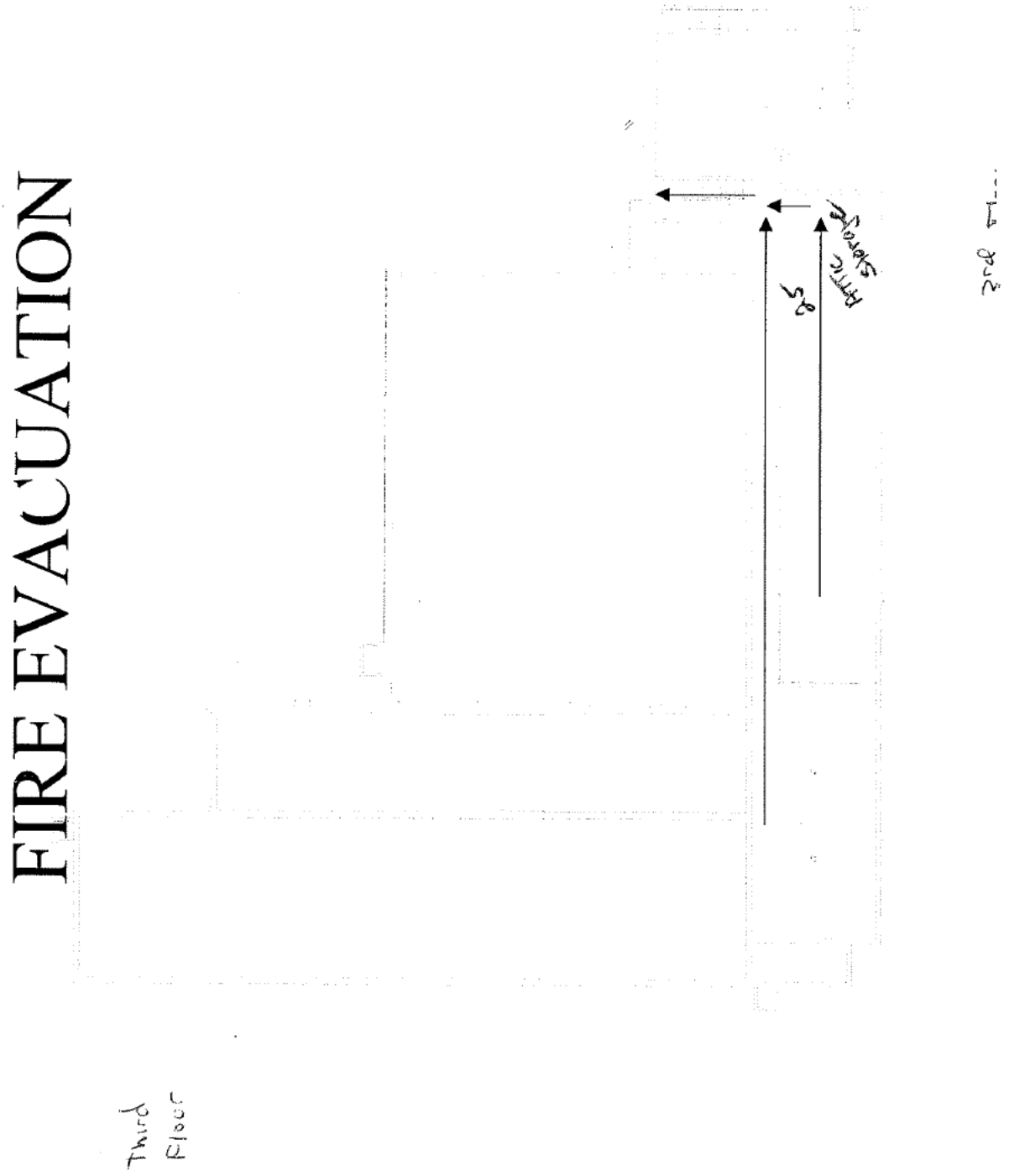
Appendix A
Building Layout



FIRE EVACUATION

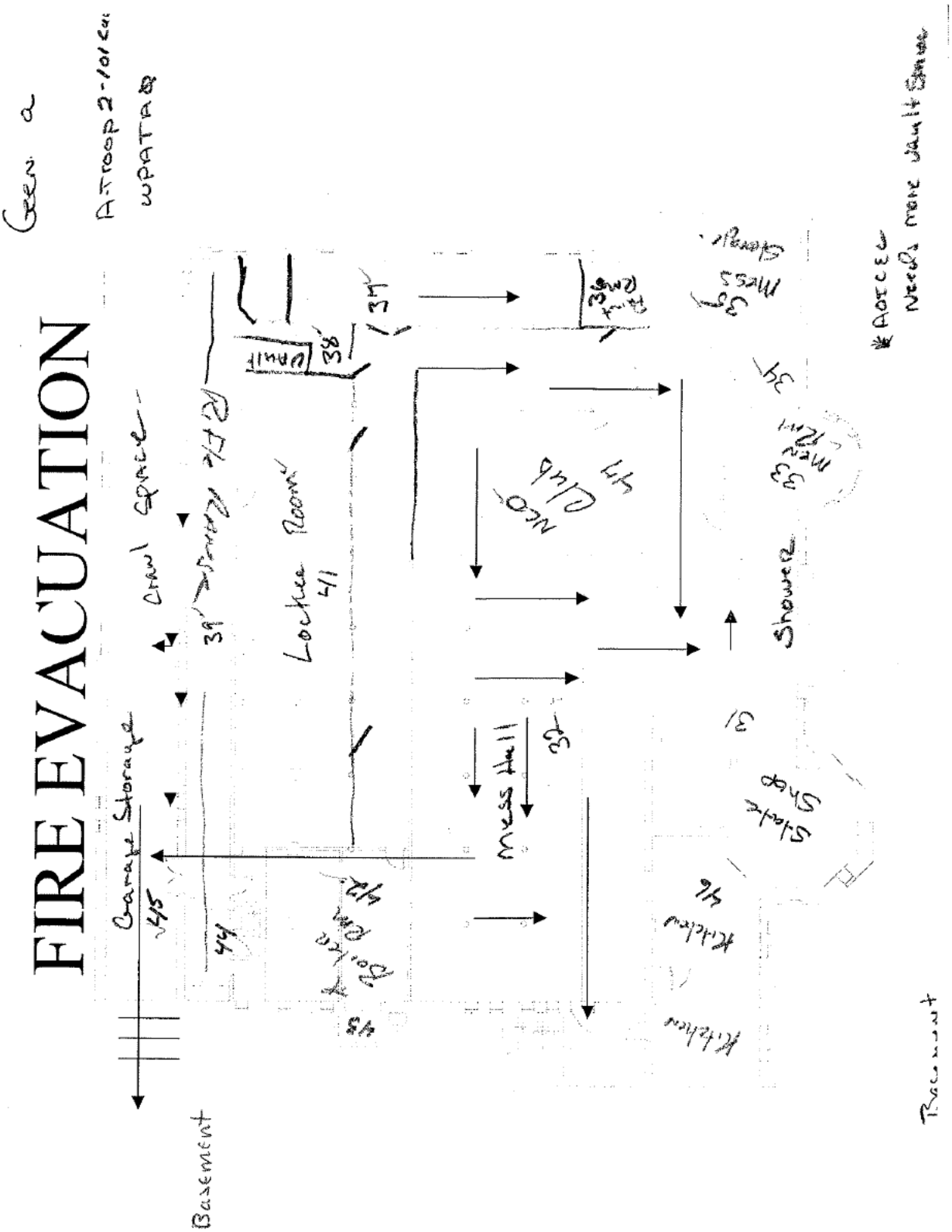


Second Floor



Geneva New York State Readiness Center
Geneva, New York
September 8, 2008

Consolidated Safety Services



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Appendix B

Sampling Sheets and Laboratory Results for Suspect Asbestos Floor Tile Samples, Lead Paint Chip Samples, Lead Dust Wipe Samples, and Lead Air Samples

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159443

Mailing/Billing Information:
1. Client Name: NGB Region North 3H office
2. Address 1: 301 - 3H old Bay Lane
3. Address 2: Havre De Grace MD 21078
4. Address 3:
5. Phone #: 410-942-6273 x5 Fax #: 410-942-6234

Submittal Information:
1. Job Name: New York State Armory Geneva NY
2. Job Location:
3. Job #: P.O. #:
4. Contact Person: [redacted] Order # 521-263-6230
5. Submitted by: [redacted] Signature [redacted]

❑ Please include COC/field data sheets with results

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: ___/___/___ @ ___ ☐Immd. ☐24hr ☐48hr ☐72hr ☐5 Day + ☐Immd. After-Hours* ☐24hr After-Hours* ☐Late-Night* (*must be pre-scheduled)
❑ Verbals: ___ @ cell # ___ ❑ Fax Copy: ___ @ fax # ___ ❑ Email Copy: ___ @ ___

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity___ in a 25mm 37mm
❑ NIOSH 7400 ___(QTY)
❑ Fiberglass ___(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity___ in a 25mm 37mm
❑ AHERA ___(QTY)
❑ NIOSH 7402 ___(QTY)
❑ Other (specify ___) ___(QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate 2 (QTY)
❑ EPA Point Count ___(QTY)
❑ NY State Friable 198.1 ___(QTY)
❑ Grav. Reduction ELAP 198.6 ___(QTY)
❑ Other (specify ___) ___(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield ___(QTY)
❑ NY State PLM/TEM ___(QTY)
❑ Residual Ash ___(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust ___(QTY)
❑ Quan. (s/area) Vacuum D5755-95 ___(QTY)
❑ Quan. (s/area)Dust D6480-99 ___(QTY)
TEM Water
❑ Qual. (pres/abs) ___(QTY)
❑ ELAP 198.2/EPA 100.2 ___(QTY)
❑ EPA 100.1 ___(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples ___ °C)

Lead Analysis
❑ Paint Chip 7 (QTY)
❑ Dust Wipe (wipe type wet wipe) 19 (QTY)
❑ Air 2 (QTY)
❑ Soil/Solid ___(QTY)
❑ TCLP ___(QTY)
❑ Drinking Water ___(QTY)
❑ Waste Water ___(QTY)
❑ Dust Wipe Furnace (wipe type ___) ___(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap ___(QTY) ❑ Bulk ___(QTY)
❑ Surface Swab ___(QTY) ❑ Surface Vacuum Dust ___(QTY)
❑ Surface Tape ___(QTY) ❑ Other (Specify ___) ___(QTY)

SAMPLE INFORMATION					ANALYSIS							MATRIX					CLIENT CONTACT (LABORATORY STAFF ONLY)
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	
908 2008-01	old Firing Range	9/8/08		144 ft²				X				X					Date/Time: Contact: By:
908 2008-02	old Firing Range	"		144 ft²				X				X					
908 2008-03	old Firing Range	"		"				X				X					
908 2008-04	old Firing Range	"		"				X				X					
908 2008-05	old Firing Range	"		"				X				X					Date/Time: Contact: By:
908 2008-06	Drill Hall	"		"				X				X					
908 2008-07	Drill Hall	"		"				X				X					
908 2008-08	Drill Hall	"		"				X				X					
908 2008-09	Drill Hall	"		"				X				X					Date/Time: Contact: By:
908 2008-10	Drill Hall	"		"				X				X					
908 2008-11	Room 119	"		"				X				X					
908 2008-12	Room 112	"		"				X				X					
908 2008-13	Attached Garage	"		"				X				X					

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ___/___/___ @ ___ Via: ___ By (Print): ___ Sign: ___
2. Date/Time Analyzed: ___/___/___ @ ___ By (Print): ___ Sign: ___
3. Results Reported To: ___ Via: ___ Date: ___/___/___ Time: ___ Initials: ___
4. Comments: ___

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159444

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
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Mailing/Billing Information:
1. Client Name: NGB Region North JH office
2. Address 1: 301 - JH old Bay Lane
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4. Address 3:
5. Phone #: 410-942-0277 Fax #:

Submittal Information:
1. Job Name: New York State Armory Elmira NY
2. Job Location:
3. Job #: P.O. #:
4. Contact Person: [redacted] NGB-Redacted @ phone # 571-265-6230
5. Submitted by: [redacted] NGB-Redacted Signature

❑ Please include COC/field data sheets with results

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: ___/___/___ @ ___ ❑Immd. ❑24hr ❑48hr ❑72hr ❑5 Day + ❑Immd. After-Hours* ❑24hr After-Hours* ❑Late-Night* (*must be pre-scheduled)

❑ Verbals: ___ @ cell # ___ ❑ Fax Copy: ___ @ fax # ___ ❑ Email Copy: ___ @ ___

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity___ in a 25mm 37mm
❑ NIOSH 7400___(QTY)
❑ Fiberglass___(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity___ in a 25mm 37mm
❑ AHERA___(QTY)
❑ NIOSH 7402___(QTY)
❑ Other (specify___)___(QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate___(QTY)
❑ EPA Point Count___(QTY)
❑ NY State Friable 198.1___(QTY)
❑ Grav. Reduction ELAP 198.6___(QTY)
❑ Other (specify___)___(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield___(QTY)
❑ NY State PLM/TEM___(QTY)
❑ Residual Ash___(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust___(QTY)
❑ Quan. (s/area) Vacuum D5755-95___(QTY)
❑ Quan. (s/area)Dust D6480-99___(QTY)
TEM Water
❑ Qual. (pres/abs)___(QTY)
❑ ELAP 198.2/EPA 100.2___(QTY)
❑ EPA 100.1___(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples ___°C)

Lead Analysis
❑ Paint Chip___(QTY)
❑ Dust Wipe (wipe type___)___(QTY)
❑ Air___(QTY)
❑ Soil/Solid___(QTY)
❑ TCLP___(QTY)
❑ Drinking Water___(QTY)
❑ Waste Water___(QTY)
❑ Dust Wipe Furnace (wipe type___)___(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap ___(QTY) ❑ Bulk ___(QTY)
❑ Surface Swab ___(QTY) ❑ Surface Vacuum Dust ___(QTY)
❑ Surface Tape ___(QTY) ❑ Other (Specify___)___(QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	MATRIX: BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
9082008-14	Room # 6	9/8/08		1ft²				X				X					Date/Time: Contact: By:
9082008-15	Room # 22			1ft²				X				X					
9082008-16	Room # 21			1ft²				X				X					
9082008-17	2nd floor hallway			1ft²				X				X					
9082008-18	Pool outside Range			1ft²				X				X					Date/Time: Contact: By:
9082008-19	table in kitchen			1ft²				X				X					
9082008-30	Drill Hall							X			X						
9082008-31	Room # 11							X			X						
9082008-32	Room # 21							X			X						Date/Time: Contact: By:
9082008-33	Room # 1							X			X						
9082008-34	Room # 35							X			X						
9082008-35	Room # 41							X			X						
9082008-36	Room # 46							X			X						

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ___/___/___ @ ___ Via: ___ By (Print): ___ Sign: ___
2. Date/Time Analyzed: ___/___/___ @ ___ By (Print): ___ Sign: ___
3. Results Reported To: ___ Via: ___ Date: ___/___/___ Time: ___ Initials: ___
4. Comments: ___

AMA Analytical Services, Inc.

AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 148435

Mailing/Billing Information:
1. Client Name: NGB Region 3 H office
2. Address 1: 301-3H old Bay Lane
3. Address 2: Havre De Grace MD 21078
4. Address 3:
5. Phone #: 410-942-0273 x5 Fax #: 410-942-0254

Submittal Information:
1. Job Name: New York State Armory Geneva NY
2. Job Location:
3. Job #: P.O. #:
4. Contact Person [redacted] @ ph
5. Submitted by: [redacted] Signature: [redacted]

❑ Please include COC/field data sheets with results

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: ____/____/____ @ ____ ☐Immd. ☐24hr ☐48hr ☐72hr ☐5 Day + ☐Immd. After-Hours* ☐24hr After-Hours* ☐Late-Night* (*must be pre-scheduled)

❑ Verbals: ____ @ cell # ____ ❑ Fax Copy: ____ @ fax # ____ ❑ Email Copy: ____ @ ____

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity____ in a 25mm 37mm
❑ NIOSH 7400____(QTY)
❑ Fiberglass____(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity____ in a 25mm 37mm
❑ AHERA____(QTY)
❑ NIOSH 7402____(QTY)
❑ Other (specify____)____(QTY)
PLM Bulk
❑ EPA 600 -- Visual Estimate____(QTY)
❑ EPA Point Count____(QTY)
❑ NY State Friable____(QTY)
❑ Grav. Reduction ELAP 198.1____(QTY)
❑ Other (specify____)____(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield____(QTY)
❑ NY State PLM/TEM____(QTY)
❑ Residual Ash____(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust____(QTY)
❑ Quan. (s/area) Vacuum D5755-95____(QTY)
❑ Quan. (s/area)Dust D6480-99____(QTY)
TEM Water
❑ Qual. (pres/abs)____(QTY)
❑ ELAP 198.2/EPA 100.2____(QTY)
❑ EPA 100.1____(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples ____ ℃)

Lead Analysis
❑ Paint Chip____(QTY)
❑ Dust Wipe (wipe type____)____(QTY)
❑ Air____(QTY)
❑ Soil/Solid____(QTY)
❑ TCLP____(QTY)
❑ Drinking Water____(QTY)
❑ Waste Water____(QTY)
❑ Dust Wipe Furnace (wipe type____)____(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap____(QTY) ❑ Bulk____(QTY)
❑ Surface Swab____(QTY) ❑ Surface Vacuum Dust____(QTY)
❑ Surface Tape____(QTY) ❑ Other (Specify____)____(QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
9082008-60	Room #9	9/8/08					X				X						Date/Time: Contact: By:
9082008-61	Room #21						X				X						
9082008-60	Room #22		2L/Min														
9082008-61	Room #25		2L/Min														
																	Date/Time: Contact: By:
																	Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ____/____/____ @ ____ Via: ____ By (Print): ____ Sign: ____
2. Date/Time Analyzed: ____/____/____ @ ____ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ____/____/____ Time: ____ Initials: ____
4. Comments: ____

AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	New York State Armory Geneva NY	**Chain Of Custody:**	159443
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	10/9/2008 **Report Date:** 10/9/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0901150	9082008-01	Flame	Wipe	****	1.000	12	ug/ft²	< 12	ug/ft²	
0901151	9082008-02	Flame	Wipe	****	1.000	12	ug/ft²	290	ug/ft²	
0901152	9082008-03	Flame	Wipe	****	1.000	12	ug/ft²	27	ug/ft²	
0901153	9082008-04	Flame	Wipe	****	1.000	12	ug/ft²	1100	ug/ft²	
0901154	9082008-05	Flame	Wipe	****	1.000	12	ug/ft²	56	ug/ft²	
0901155	9082008-06	Flame	Wipe	****	1.000	12	ug/ft²	420	ug/ft²	
0901156	9082008-07	Flame	Wipe	****	1.000	12	ug/ft²	< 12	ug/ft²	
0901157	9082008-08	Flame	Wipe	****	1.000	12	ug/ft²	84	ug/ft²	
0901158	9082008-09	Flame	Wipe	****	1.000	12	ug/ft²	98	ug/ft²	
0901159	9082008-10	Flame	Wipe	****	1.000	12	ug/ft²	< 12	ug/ft²	
0901160	9082008-11	Flame	Wipe	****	1.000	12	ug/ft²	180	ug/ft²	
0901161	9082008-12	Flame	Wipe	****	1.000	12	ug/ft²	< 12	ug/ft²	
0901162	9082008-13	Flame	Wipe	****	1.000	12	ug/ft²	96	ug/ft²	
0901163	9082008-14	Flame	Wipe	****	1.000	12	ug/ft²	24	ug/ft²	
0901164	9082008-15	Flame	Wipe	****	1.000	12	ug/ft²	< 12	ug/ft²	
0901165	9082008-16	Flame	Wipe	****	1.000	12	ug/ft²	< 12	ug/ft²	
0901166	9082008-17	Flame	Wipe	****	1.000	12	ug/ft²	12	ug/ft²	
0901167	9082008-18	Flame	Wipe	****	1.000	12	ug/ft²	120	ug/ft²	
0901168	9082008-19	Flame	Wipe	****	1.000	12	ug/ft²	120	ug/ft²	

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CERTIFICATE OF ANALYSIS

100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	New York State Armory Geneva NY	**Chain Of Custody:**	159443
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	10/9/2008 **Report Date:** 10/9/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit			Final Result		Comments
0901169	9082008-30	Flame	Paint Chip	****	N/A	0.0085	%Pb		5.4	%Pb	
0901170	9082008-31	Flame	Paint Chip	****	N/A	0.011	%Pb		0.093	%Pb	
0901171	9082008-32	Flame	Paint Chip	****	N/A	0.0083	%Pb		0.12	%Pb	
0901172	9082008-33	Flame	Paint Chip	****	N/A	0.01	%Pb		5.7	%Pb	
0901173	9082008-34	Flame	Paint Chip	****	N/A	0.01	%Pb		0.16	%Pb	
0901174	9082008-35	Flame	Paint Chip	****	N/A	0.01	%Pb		0.02	%Pb	
0901175	9082008-36	Flame	Paint Chip	****	N/A	0.0097	%Pb		2.1	%Pb	
0901176	9082008-60	Flame	Air	774	N/A	3.9	ug/m³	<	3.9	ug/m³	
0901177	9082008-61	Flame	Air	780	N/A	3.8	ug/m³	<	3.8	ug/m³	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these samples.

NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted]

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A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	New York State Armory Geneva NY	**Chain Of Custody:**	159443
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	10/9/2008
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0901178	9082008-80	4	4	--	--	--	--	--	TR	--	--	96	Brown	Homogeneous	LBP	
0901179	9082008-81	3	3	--	--	--	--	--	--	--	--	97	Dark Brown	Homogeneous	LBP	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

[redacted]

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Appendix C
Selected Photographs of the Geneva New York State Readiness Center

Photo 1: The exterior front of the building that houses the Geneva New York State Readiness Center.

Photo 2: An exterior view of the attached garage at the Geneva New York State Readiness Center.

Photo 3: A view of the Drill Hall located on the first floor of the Geneva New York State Readiness Center.

Photo 4: A view of the indoor Firing Range that reportedly has been cleaned.

Photo 5: Evidence of water damage on the wall of Room 21 (First Sergeant's Office).

Photo 6: Evidence of water damage Room 8 (Supply Office).

Photo 7: Damaged 9 inch x 9 inch brown floor tile with black and white flecks located in Room 9 (Cammo Room).

Photo 8: Damaged 9 inch x 9 inch brown floor tile with white and black flecks in Room 21 First Sergeant's Office.

Photo 9: A phone cord presents a trip hazard in Room 17 (Commander's Office).

Appendix D
Risk Assessment Code Determination

RISK ASSESSMENT CODE DETERMINATION

A Risk Assessment Code (RAC) for each hazard identified is provided at the end of each hazard description. The RAC codes are derived using the matrix provided by the National Guard (reference DOD Instruction 6055.1). This process includes three steps:

- Step 1: Determine the Health Hazard Severity Code (HHSC)

A. Exposure Points Assessed

	Exposure Conditions				
		<CT	Occasionally >CT Always <STD	>CT ≤STD	>STD
AER Possible?	No	0	3	5	7
	Yes	1-2	4	6	8

AER – Alternate exposure route, such as skin absorption, ingestion

CT – DoD component threshold that triggers surveillance actions, such as microwatts/cm^2, dB, parts per million (ppm)

STD – DoD exposure limit, such as Threshold Limit Value (TLV) and Permissible Exposure Limit (PEL)

B. Medical Effects Points Assessed

Condition	Points
No medical effect, such as nuisance noise and nuisance odor	2
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability such as metal fume fever	3-4
Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling, irreversible illness or death, such as asbestosis and lung cancer	7-8

C. Determine the HHSC by totaling the points assessed and using the following guide:

Total Points (sum of A and B)	HHSC
13-16	I
9-12	II
5-8	III
0-4	IV

- Step 2: Determine the Mishap Probability Category (MPC)

A. Duration of Exposure Points Assessed

		Length of Exposure		
		1-8 hr/week	>8hr/week not continuous	Continuous
Type of Exposure	Irregular, intermittent	1-2	4-6	----
	Regular, periodic	2-3	5-7	8

B. Number of Exposed Personnel Points Assessed

Number of Exposed Personnel	Points
<5	1-2
5-9	3-4
9-49	5-6
>49	7-8

C. Determine the MPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum A and B)	MPC
14-16	A
10-13	B
5-9	C
<5	D

Step 3: Determine the RAC using the following matrix;

		Mishap Probability Category (MPC)			
		A	B	C	D
Health Hazard Severity Code	I	1	1	2	3
	II	1	2	3	4
	III	2	3	4	5
	IV	3	4	5	5

Appendix E
References

BEST AVAILABLE COPY

References

1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
2. Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.
3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.
4. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.
5. Army Regulation (AR) 40-5, Medical Services, Preventive Medicine, May 25, 2007.
6. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007.
7. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 10, 1998.
8. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
9. Technical Manual (TM) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.
10. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
11. Industrial Ventilation – A Manual of Recommended Practices, American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
12. ANSI Z358.1 – 2004, Emergency Eyewash and Shower Equipment.
13. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
14. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
15. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2007, “Ventilation for Acceptable Indoor Air Quality”.
16. Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Geneva Readiness Center
Geneva, NY 14456-2606

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 30, 2013

Bonus Environmental, LLC

TABLE OF CONTENTS

APPENDICES

January 30, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Geneva Readiness Center, Geneva, NY 14456-2606

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Geneva Readiness Center located at 300 Main Street in Geneva, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 16, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Geneva Readiness Center is an Army National Guard armory comprised of offices, locker rooms, storage rooms, a conference room, a gym, a drill hall, a kitchen, a mess hall, a lounge, a boiler room, maintenance (storage) bays (no maintenance activity, and no exhaust ventilation system), and a former indoor firing range. The point of contact for the approximately 29,242 ft² Geneva Readiness Center is Mr. Raymond Carmody. Health and Safety programs reviewed during this survey included personal protective equipment (PPE), Lock-Out/Tag-Out, Asbestos Awareness, Fire Safety, and Confined Spaces. Four (4) full-time administrative personnel are employed at the Geneva Readiness Center. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twelve (12) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Geneva Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
Geneva RC-LW-1	11-16-12	Field Blank	---	< 12 μg
Geneva RC-LW-2	11-16-12	Office 103, on filing cabinet	0.111	< 110
Geneva RC-LW-3	11-16-12	Drill Hall, on floor, southeast end	0.111	< 110
Geneva RC-LW-4	11-16-12	Drill Hall, on floor, northwest end	0.111	< 110
Geneva RC-LW-5	11-16-12	Drill Hall, on top of refrigerator	0.111	< 110
Geneva RC-LW-6	11-16-12	Drill Hall, on top of wooden shelving	0.111	< 110
Geneva RC-LW-7	11-16-12	Drill Hall, on top of Westinghouse heater (southeast heater)	0.111	160
Geneva RC-LW-8	11-16-12	Kitchen, on top of storage rack	0.111	120
Geneva RC-LW-9	11-16-12	Former indoor firing range, on floor, southeast end	0.111	7,400
Geneva RC-LW-10	11-16-12	Former indoor firing range, on floor, northwest end	0.111	2,900
Geneva RC-LW-11	11-16-12	Mess Hall, on heater fin	0.111	< 110
Geneva RC-	11-16-12	Men’s locker room, on top of locker #5	0.111	250

Army National Guard – Geneva Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-12				
Geneva RC-LW-13	11-16-12	Office 207, on window sill	0.111	420

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range is not currently used (it is padlocked and empty, and was unlocked to enable the wipe sampling). It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Geneva Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified several areas of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling paint in the following areas:

- Approximately 35 ft² peeling yellow paint in the Drill Hall (120);
- Approximately 10 ft² peeling grey paint in the Serving Room;
- Approximately 15 ft² peeling grey paint in the Kitchen;
- Approximately 3 ft² peeling white paint in the Kitchen;
- Approximately 1 ft² peeling white paint in the Locker Room;
- Approximately 6 ft² peeling white paint in the Office/Storage;
- Approximately 2 ft² peeling white paint in the Supply Office (122);
- Approximately 2 ft² peeling white paint in the Storage (112);
- Approximately 3 ft² peeling white paint in the 2nd Floor Hallway;
- Approximately 3 ft² peeling blue paint in the Kitchen;
- Approximately 1 ft² peeling blue paint in the Locker Room

Four (4) paint chip samples were collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. See table below for sample information:

Army National Guard – Geneva Readiness Center *Paint Chip Samples*				
Sample #	*Sample Location*	*Color*	*Analytical Reporting Limit (%)*	*Analytical Results (%)*
GenevaRC-PC-1	Drill Hall	Yellow	0.0039	7.4
GenevaRC-PC-2	Kitchen	Gray	0.0056	0.071
GenevaRC-PC-3	Kitchen	White	0.0053	0.3
GenevaRC-PC-4	Kitchen	Blue	0.0077	0.61

Analysis indicated that each of the peeling paints collected and submitted contained detectable levels of lead. The paints are therefore each considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Geneva Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did identify PACM that was considered to be in poor or damaged condition (approximately 2 ft^2 of damaged plaster on the ceiling of Supply office 122 was inaccessible to collect a bulk sample).

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Geneva Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified approximately 2 ft^2 of water damaged plaster on the ceiling within the Supply Office (122).

3.4 - Housekeeping

During the industrial hygiene evaluation of the Geneva Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Geneva Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Geneva Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Geneva Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 411 ppm to 502 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 3.3 ppm to 6.4 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Geneva Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 56.1ºF to 68.4ºF and are not considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Geneva Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 34.2% to 60.8%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Geneva Readiness Center *Indoor Air Quality Measurements*				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, northeast side of building (mostly cloudy)	411	6.4	39.7	48.4
Superintendent's office 104	439	3.6	60.8	**56.1**
Drill Hall	420	3.3	49.1	**59.4**
Office 123 (3 people in room)	494	4.0	43.7	**61.3**
Mess Hall	502	4.0	43.9	**64.2**
Kitchen	471	4.3	38.0	**63.9**
Garage	478	4.5	35.3	**63.4**
Office 209	432	4.3	38.1	68.4
Locker Room 204	419	4.6	34.8	68.1
Storage Room 305	436	4.9	34.2	67.1
Storage Room 303	431	5.2	35.7	**64.8**

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Geneva Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Geneva Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Maintenance office	33.6	75	No
Mess Hall	152.2	10	Yes
Lounge	40.6	10	Yes
Serving Room	9.8	50	No
Kitchen	61.7	50	Yes
Boiler Room	51.6	30	Yes
Garage (storage)	21.0	30	No
Locker Room	31.2	7	Yes
Former Indoor Firing Range	4.1	30	No
Storage	Inaccessible		
Paint Supply Room	101.1	30	Yes
Office/Storage	21.3	50	No
Men's Restroom	17.7	5	Yes
Men's Shower Area	4.9	7	No
Office (123)	24.4	50	No
Conference Room (124)	15.7	30	No
Drill Hall (120)	43.0	30	Yes
Supply Office (122)	67.9	50	Yes

Army National Guard – Geneva Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Storage (121)	Inaccessible		
Storage (119)	Inaccessible		
Storage (118)	Inaccessible		
Storage (117)	Inaccessible		
Storage (116)	Inaccessible		
Storage (115)	Inaccessible		
Weight Room (114)	12.4	30	No
Storage (113)	30.0	30	Yes
Storage (112)	18.7	30	No
Recruiting Office (108)	15.1	50	No
Maintenance Garage (109) (storage)	22.3	30	No
Latrine (110)	5.9	5	Yes
Storage (111)	Inaccessible		
Female Locker Room (106)	37.3	7	Yes
Female Restroom	33.3	5	Yes
Superintendent's Office (104)	32.8	50	No
Office (103)	35.3	50	No
Office (203)	43.9	50	No
2nd Floor Hallway	15.6	5	Yes
Unisex Restroom (205)	33.8	5	Yes
Locker Room (204)	67.4	7	Yes
Office (206)	50.9	50	Yes
Office (207)	51.2	50	Yes
Copy Room/Office (208)	32.9	50	No
Office (209)	34.1	50	No
Office (210)	21.9	50	No
Storage (301)	35.2	30	Yes
Storage (303)	20.9	30	No
Storage (304)	Inaccessible		
Storage (302)	No Lighting		
Storage (305)	26.5	30	No
Storage (306)	6.0	30	No
Storage (401) (Not Used)	10.7	30	No
Storage (501) (Not Used)	3.8	30	No

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Geneva Readiness Center located at 300 Main Street in Geneva, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on November 16, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Geneva Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:

    - Former indoor firing range, southeast end, on floor;
    - Former indoor firing range, northwest end, on floor;
    - Men's locker room, on top of locker #5;
    - Office 207, on window sill

2. Bonus Environmental, LLC identified several areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC identified PACM that was considered to be in poor or damaged condition (approximately 2 ft^2 of damaged plaster on the ceiling of Supply office 122 was inaccessible to collect a bulk sample).

4. Bonus Environmental, LLC identified approximately 2 ft² of water damaged plaster ceiling.

5. Bonus Environmental, LLC found the housekeeping practices within Geneva Readiness Center in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Geneva Readiness Center. All were found to be within their acceptable ranges/limits; with the exception of several temperature readings.

8. Areas within the Geneva Readiness Center facility were identified as improperly illuminated.

9. Health and Safety programs reviewed during this survey included personal protective equipment (PPE), Lock-Out/Tag-Out, Asbestos Awareness, Fire Safety, and Confined Spaces. All were found to meet regulatory requirements.

10. No vehicle maintenance occurs in the maintenance bays, which are used for storage. No vehicle exhaust ventilation system exists in the maintenance bays.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

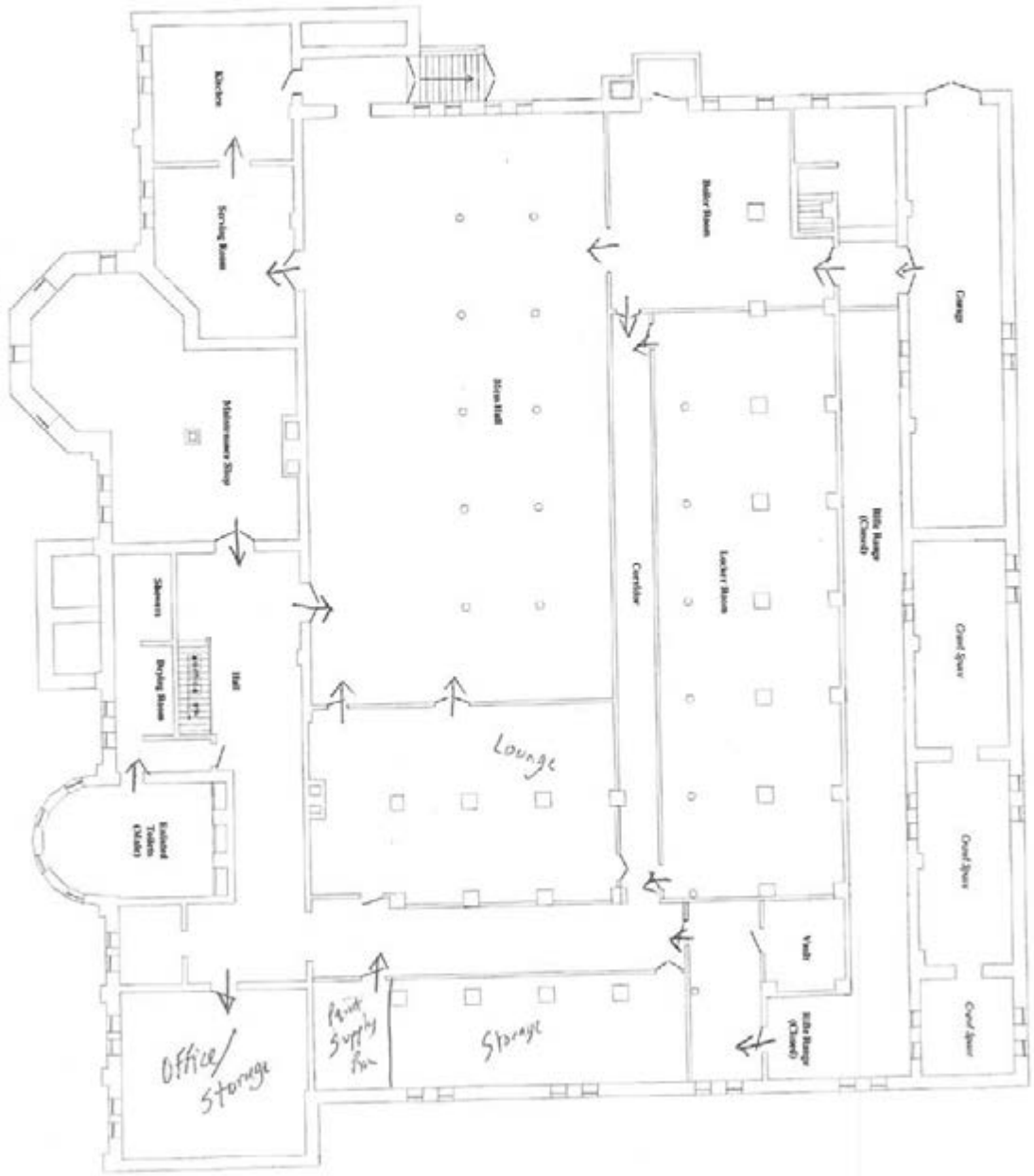
Non-Responsive

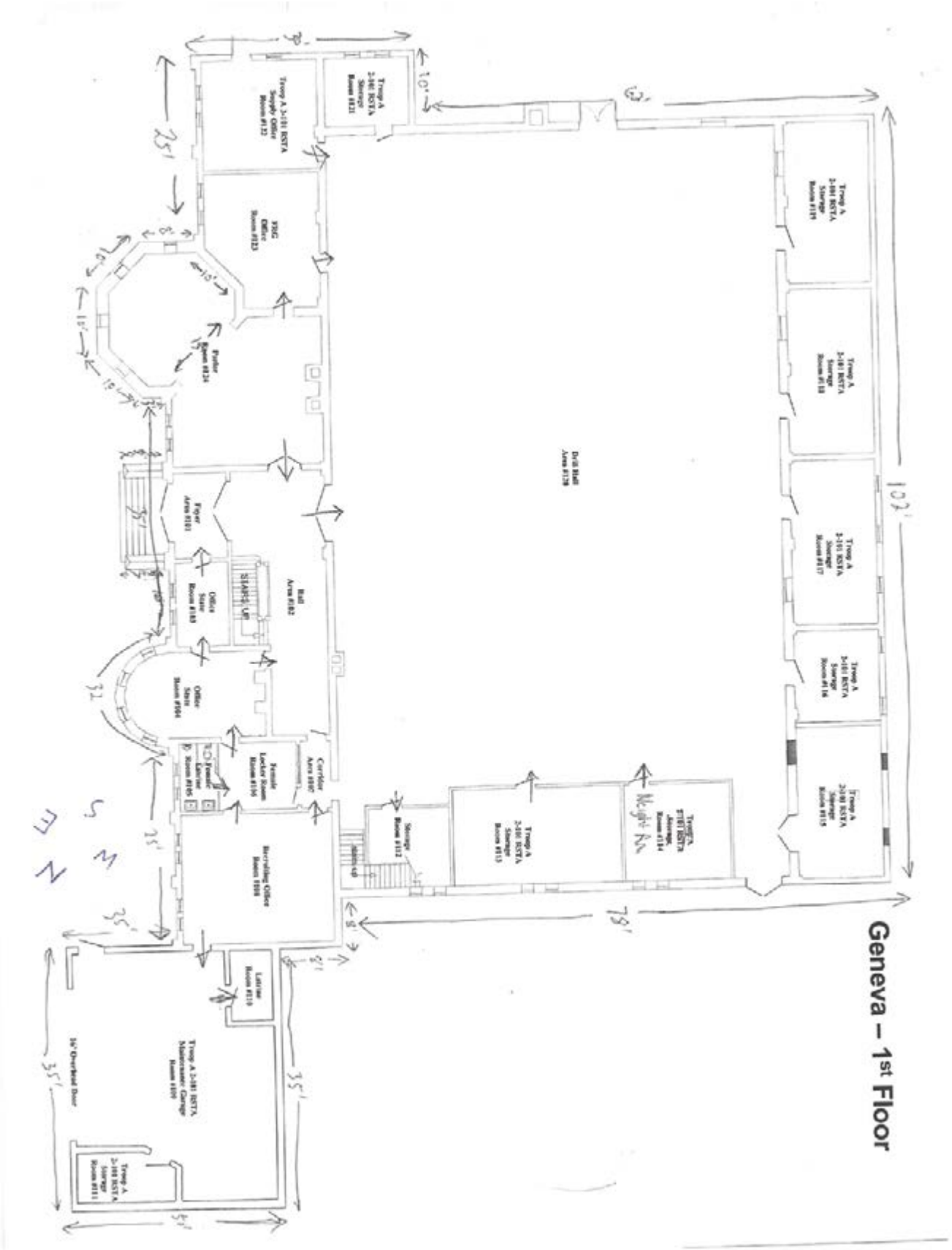
Principal
Bonus Environmental, LLC

Appendix A

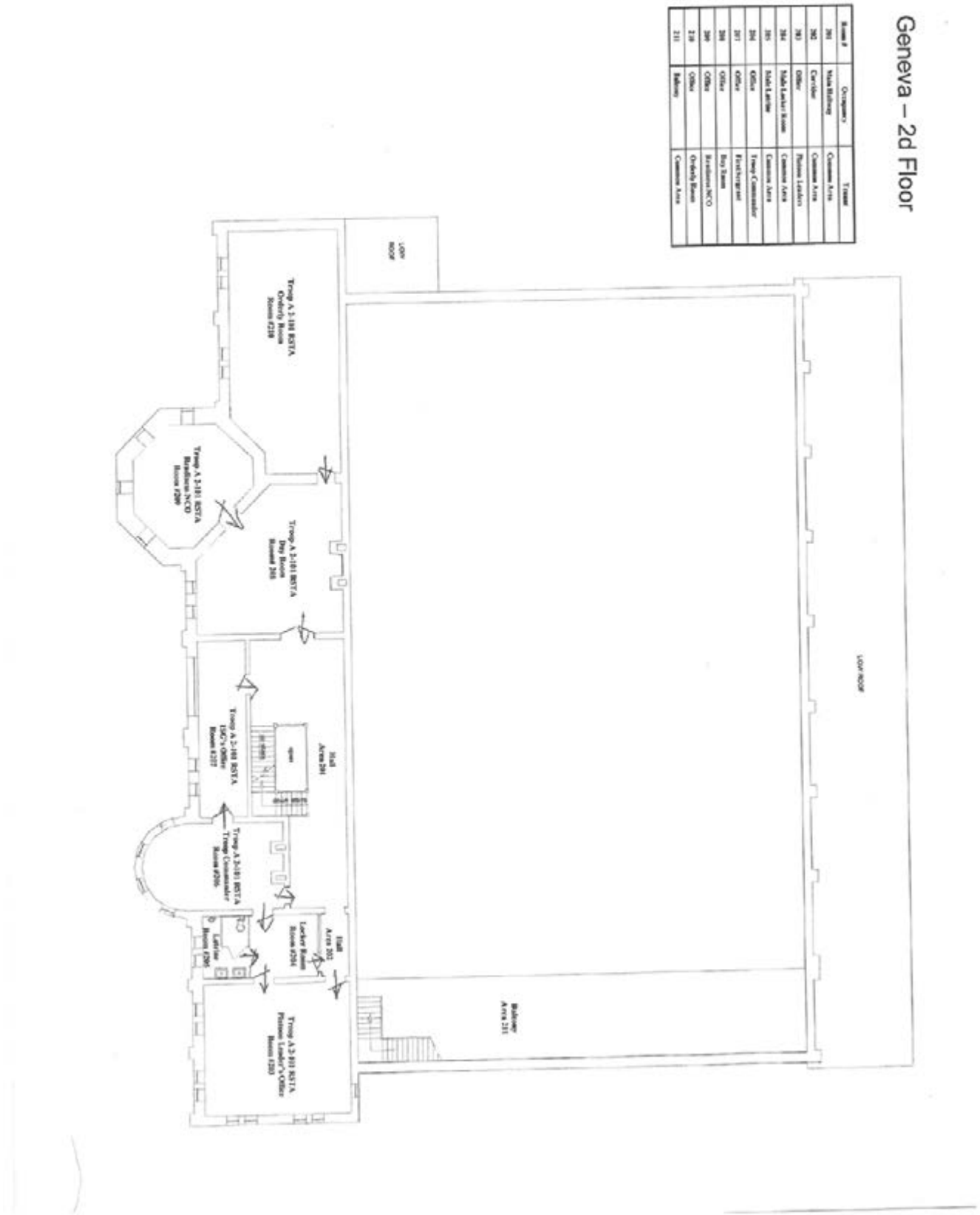
Shop Diagram and Air Flow Patterns

Geneva – Basement

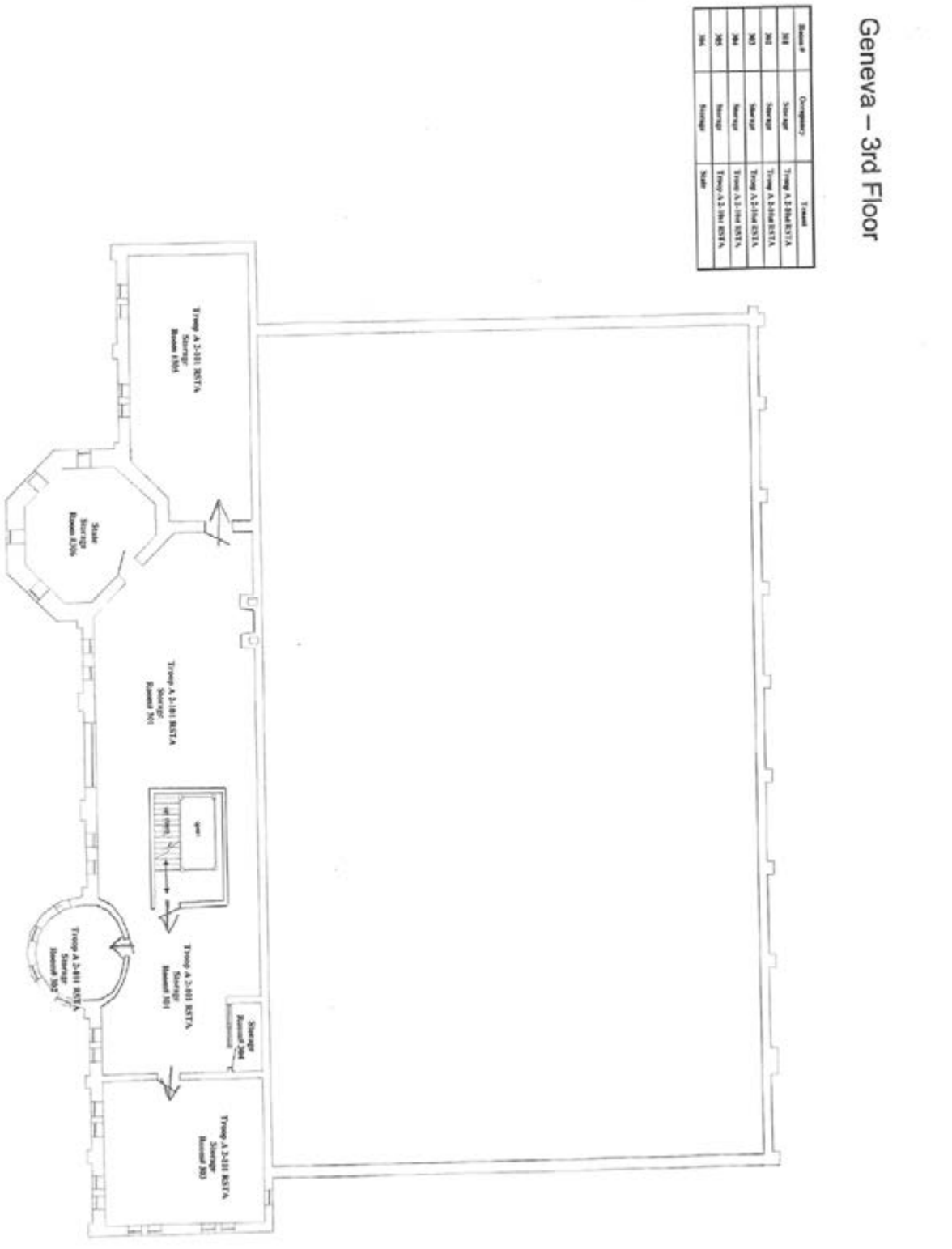


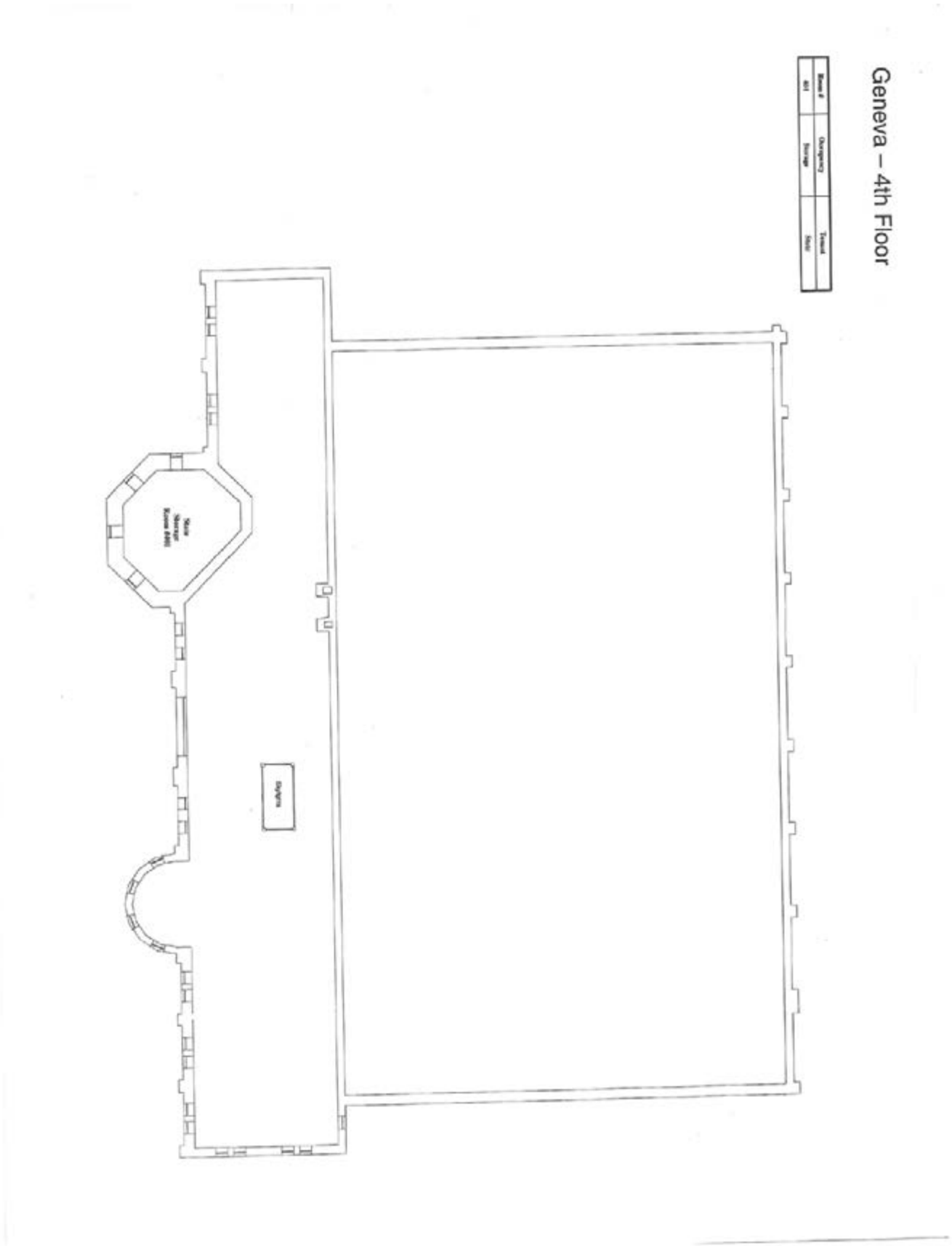


Geneva – 2d Floor



Geneva – 3rd Floor





Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Geneva RC	Chain Of Custody:	514538
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	300 Main Street, Geneva, NY 14456	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/30/2012 Report Date: 11/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016518	GenevaRC-PC-1	Flame	Paint Chip	****	N/A	0.0039	%Pb		7.4	%Pb	
13016519	GenevaRC-PC-2	Flame	Paint Chip	****	N/A	0.0056	%Pb		0.071	%Pb	
13016520	GenevaRC-PC-3	Flame	Paint Chip	****	N/A	0.0053	%Pb		0.3	%Pb	
13016521	GenevaRC-PC-4	Flame	Paint Chip	****	N/A	0.0077	%Pb		0.61	%Pb	
13016522	GenevaRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13016523	GenevaRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016524	GenevaRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016525	GenevaRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016526	GenevaRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016527	GenevaRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016528	GenevaRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	18	160	ug/ft²	
13016529	GenevaRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	14	120	ug/ft²	
13016530	GenevaRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	820	7400	ug/ft²	
13016531	GenevaRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	330	2900	ug/ft²	
13016532	GenevaRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016533	GenevaRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	28	250	ug/ft²	
13016534	GenevaRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	47	420	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
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LAB #100470

Client:	National Guard Bureau	Job Name:	Geneva RC	Chain Of Custody:	514538
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	300 Main Street, Geneva, NY 14456	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/30/2012 Report Date: 11/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Analy Non-Responsive

Technical Manager: Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
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4475 Forbes Blvd. • Lanham, MD 20706
(301)-459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To Th Number For Inquire 514538

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Geneva RC
2. Job Location: 300 Main Street, Geneva NY 14456
3. Job #: 10-1-15 PO # W912K6-09-A-0003
4. Contact Person [redacted] @ phone #
5. Submitted by: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-D[redacted]cts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day + ☐ Results Required By Noon	☒ Email: [redacted] bonusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/30/12	☒ Fax: [redacted] us.army.mil
		☒ Verbal: [redacted] us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis

☒ Pb Paint Chip 4 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 13 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
Geneva RC-PC-1	Drill Hall	11-16	1				*			*						Date/Time: Contact: By:
Geneva RC-PC-2	Kitchen						*			*						
Geneva RC-PC-3	Kitchen						*			*						
* SEE ATTACHED FIELD DATA SHEETS		*					*				*					
Geneva RC-PC-4	Kitchen						*			*						Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11/21/12 @ 11:25 Via: FEDEX By (Print): [redacted]
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 799-5126-6925

Surface Sampling Field Data Sheet

Date Collected: 1-16-12
Job Number: 1061-15
Contact Person: [redacted]

Job Name: Geneva RC
Job Location:
Address: 300 Main Street
Geneva NY 14456

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: [redacted]
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Geneva RC-LW-1	Field Blank	—	—	Ghost wipe
Geneva RC-LW-2	Office 103	On Filing Cabinet	4"x4"	
Geneva RC-LW-3	Drill Hall	On Floor, SE End		
Geneva RC-LW-4	Drill Hall	On Floor, NW End		
Geneva RC-LW-5	Drill Hall	On top of refrigerator		
Geneva RC-LW-6	Drill Hall	On top of wooden shelving		
Geneva RC-LW-7	Drill Hall	On top of Westinghouse Heater, (South East Heater)		
Geneva RC-LW-8	Kitchen	On top of Storage Rack		
Geneva RC-LW-9	Former Indoor Firing Range	On Floor, SE End		
Geneva RC-LW-10	Former Indoor Firing Range	On floor, NW End		
Geneva RC-LW-11	Mess Hall	On Heater Fin		
Geneva RC-LW-12	Locker Rm (Mens)	On top of Locker #5		
Geneva RC-LW-13	Office 207	On window sill	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Photographs


Building exterior, looking southwest


Building exterior, looking south


Drill hall, looking west

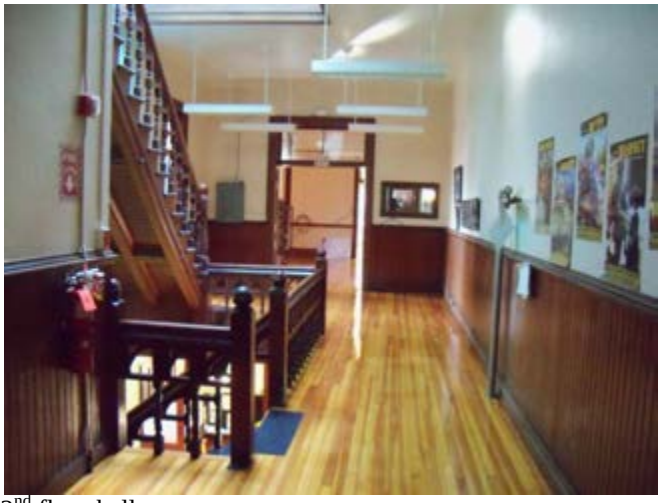

Drill hall, peeling yellow paint


Weight room


Maintenance garage (storage)

Maintenance garage, flammables cabinets


Supply office 122, damaged plaster ceiling/peeling white paint


2nd floor hallway


Kitchen


Kitchen, peeling blue paint


Kitchen, peeling gray floor paint

Boiler room

Boiler room, emergency eyewash

Men’s locker room

Former indoor firing range

Appendix D

References

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 Jan 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

JUL 05 2007

MCHB-TS-OFS

MEMORANDUM FOR National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive 301-IH Old Bay Lane, Havre de Grace, MD 21078

SUBJECT: New York Army National Guard Facilities Industrial Hygiene Survey, Report No. 55-ML-048L-05/07, Horseheads Armory, Horseheads, NY, 6 October 2005

1. Enclosed are a copy of the subject report and two CD-ROMs.

2. Our point of contact is Mr. Non-Responsive t commercial (410) 436-5474/3118, DSN 584-5474/3118, or electronic mail: Non-Responsive@us.army.mil.

FOR THE COMMANDER:

Non-Responsive

Encl

Director, Occupational Health Sciences

CF: (wo/CD ROMs)
USACHPPM-N (MCHB-AN-IH/MR. Non-Responsive

Readiness thru Health

U.S. Army Center for Health Promotion and Preventive Medicine

USCHPPM

NEW YORK ARMY NATIONAL GUARD FACILITIES
INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
HORSEHEADS ARMORY
HORSEHEADS, NY
6 OCTOBER 2005

Distribution limited to U.S. Government agencies only. Requests for this document must be referred to the National Guard Bu[redacted]
Industrial Hygiene Offi[redacted]NE/Ms. Non-Responsive
301-IH Old Bay Lane, Havre de Grace, MD 21078

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

Readiness Thru Health

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U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
NEW YORK ARMY NATIONAL GUARD FACILITIES
INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
HORSEHEADS ARMORY
HORSEHEADS, NY
6 OCTOBER 2005

1. PURPOSE. Conduct an industrial hygiene survey of the New York Army National Guard (NYARNG) Horseheads Armory, Horseheads, NY to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve as a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

2. CONCLUSIONS. Significant health and safety concerns were: an inadequate Hazard Communication Program (HCP) and associated documentation; lack of regular maintenance of Heating, Ventilation and Air Conditioning (HVAC) systems; exposures to lead, welding fumes, and vehicle emissions; potential exposures to asbestos; serious trip hazards; and inadequately maintained fire extinguishers. Potential carbon monoxide (CO), noise, lighting, and ergonomic hazards should be assessed.

3. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Safety and Occupational Health Programs. Health RAC 4. Develop a written HCP that is specific to the Horseheads Armory. Review annually to ensure any changes in policies, procedures or operations have been evaluated. Ensure that the chemical inventory sheet and Material Safety Data Sheets lists the chemicals actually used in the work area. Update these documents periodically.

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EXSUM, NYARNG IH Survey, Report No. 55-ML-048L-05/07, Horseheads Armory, Horseheads, NY, 6 Oct 05

b. HVAC Systems. Health RAC 4. Develop and implement an HVAC maintenance program. Include provisions for regularly scheduled maintenance.

c. Lead. Health RAC 3. Clean horizontal surfaces in the vault to the National Guard Bureau (NGB) Region North Industrial Hygiene Office and US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level of 200 µg/ft^2 for lead in dust on frequently contacted surfaces. Follow the guidance in National Guard Pamphlet 420-15 and in Appendix E of the report. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the former indoor firing range to the Environmental Protection Agency lead in dust standards for young children, and clean other horizontal surfaces in the vault to the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

d. Asbestos. Health RAC 3.

(1) Asbestos-containing building materials. Review the Armory and the NYARNG Environmental Office records to determine whether there are asbestos records for inspection and abatement, or if there is an Asbestos Management Plan (AMP) for Horseheads Armory. Perform an asbestos survey if no records are located. If asbestos is found, develop and implement an AMP if there is not one for the Armory.

(2) Brake pad replacement. Determine whether personnel perform this operation. If so, ensure that personnel follow the NGB Standard Operating Procedures.

e. The CO. No RAC can be assigned. Collect CO measurements in a follow-on survey. Install a vehicle exhaust ventilation system that provides at least 1,500 cubic feet per minute exhaust at each drop.

f. Welding. Health RAC 3. Evaluate exposures to welding fumes and provide a local exhaust system if needed. Provide a welding screen to protect other employees from flying sparks and intense light.

g. Lighting. Health RAC 5. If lighting levels seem inadequate, use task lighting.

h. Noise hazards. No RAC can be assigned. Assess noise hazards from vehicle maintenance operations.

EXSUM, NYARNG IH Survey, Report No. 55-ML-048L-05/07, Horseheads Armory, Horseheads, NY, 6 Oct 05

i. Ergonomics. No RAC can be assigned. Assess ergonomics hazards from vehicle maintenance operations.

j. Housekeeping. Safety RAC 3. Store materials safely. Do not store boxes, equipment and other debris in hallways or at the top of stairs.

k. Fire Extinguishers. Safety RAC 4. Recharge or remove discharged extinguishers. Inspect the building fire extinguishers monthly. Mark the tags on the extinguishers with the initials of the person conducting the inspection. Wall mount working extinguishers in a visible area. Store extinguishers waiting for servicing in a secure area, not in the hallway or base of a stairway.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Horseheads Armory, Horseheads, NY, 6 Oct 05

CONTENTS

NEW YORK ARMY NATIONAL GUARD FACILITIES
INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
HORSEHEADS ARMORY
HORSEHEADS, NY
6 OCTOBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE. Conduct an industrial hygiene survey of the New York Army National Guard (NYARNG) Horseheads Armory, Horseheads, NY to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve as a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Electronic mail, National Guard Bureau (NGB) Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 27 July 2005, subject: SAB.

4. GENERAL.

a. Personnel Contacted. The point of contact (POC) was Mr. Non-Responsive, Maintenance Superintendent, 128 Colonial Road, Horseheads, NY, Phone: (607) 739-7725.

b. Survey Personnel. This survey was conducted on 6 October 2005 by Mr. Non-Responsive, Industrial Hygienist, United States Army Center for Health Promotion and Preventive Medicine (USACHPPM).

c. Risk Assessment Codes (RACs). The Department of Defense Instruction (DODI) 6055.1 provides a method for assigning RACs to health hazards that are based on the magnitude of exposures to physical, chemical, and biological agents and the possible medical effects. The DODI 6055.1 also provides RACs for safety and ergonomic hazards. A RAC is an expression of the risk associated with a hazard that combines the hazard severity and accident probability into a single numeral. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

d. Background. The facility was constructed in 1963 and had a floor area of approximately 25,000 square feet. It was a one-story building. No floor plan could be located for this report. The Armory's mission was to support the 204th Engineer Battalion. The POC stated that children occupied the facility occasionally during special events.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Horseheads Armory, Horseheads, NY, 6 Oct 05

5. METHODOLOGY.

a. Assessment Criteria. Army Regulation 40-5 contains the requirement that airborne chemical exposures in Army facilities must comply with the lower of the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) or the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value®. The NGB Region North Industrial Hygiene Office criterion for lead in surface dust is discussed in Appendix B.

b. Calibration. All instruments were calibrated in accordance with manufacturers' instructions using National Institute of Standards and Testing traceable methods.

c. Methodology. The survey consisted of the collection of indoor air quality and ventilation measurements, sampling surface dust and air for lead, observation of work practices and procedures, and employee interviews.

6. FINDINGS AND DISCUSSION.

a. Description of Operations. An area identified by the POC as a vehicle storage area was used for many different operations, including vehicle repair, truck tire changing, battery charging, and welding. Vehicles were running inside the maintenance area during the survey. There were two ceiling fans in the area but no vehicle exhaust ventilation system exhaust. Mr Non-Responsive Maintenance Assistant, stated that welding was occasionally performed. The Armory had a former indoor firing range (IFR) that was being used as a supply room.

b. Occupational Safety and Health Programs. Hazard Communication training was documented. The written program was incomplete. It consisted of a photocopy of a generic program from another source. A hazardous chemical inventory was kept in the vehicle maintenance area. However, it was a generic list which did not match the materials used on site.

c. Building Condition. The building was in good condition and well maintained in most areas.

d. Indoor Environmental Quality.

(1) Heating, Ventilation, and Air-Conditioning (HVAC) Systems. The POC stated that the building was heated by an oil heater and cooled using window mounted air conditioning units. The building did not have mechanical ventilation. There was no scheduled maintenance of heating or air conditioning units.

(2) Mold and Moisture Problems. No mold or moisture problems were observed or reported.

e. Water Quality. There were no concerns expressed by Armory personnel about water quality. No samples were collected.

f. Lead Hazards. The POC reported that lead abatement had been performed in the former IFR. The date of construction of the facility indicated that the use of lead-based paint was possible. The painted surfaces throughout the building were in good condition with no observed chipping or peeling, therefore paint samples were not collected.

(1) Lead Criteria.

(a) Lead in paint. The Environmental Protection Agency (EPA) definition of lead-based paint is paint containing more than 0.5 percent lead by mass. It should be noted, however, that deteriorated paint with much lower levels of lead could create dust lead hazards.

(b) Lead in air. The Army has adopted the OSHA 8-hour time-weighted average PEL of 50 micrograms per cubic meter ($\mu g/m^3$).

(c) Lead in surface dust. The EPA limits for lead in dust are 40 micrograms per square foot ($\mu g/ft^2$) on floors, 250 $\mu g/ft^2$ on windowsills, and 400 $\mu g/ft^2$ in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North Industrial Hygiene Office concurs with the USACHPPM recommended maximum level of 200 $\mu g/ft^2$ on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA standards. This level was adopted from OSHA Compliance Letter 02-02-58. Further information is provided in Appendix B.

(2) Lead Results. Results and laboratory reports are in Appendix C. Surface dust sampling locations are shown in Appendix D.

(a) Lead in dust. Lead in dust sample locations and analytical results are shown in Table C-1, Appendix C. Results greater than 40 $\mu g/ft^2$ for floors or 200 $\mu g/ft^2$ for other surfaces are highlighted. One result exceeded the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level for lead in dust on frequently contacted surfaces. Personnel working in this room were potentially exposed to lead, and could have been tracking lead out of the area and redistributing it into adjacent rooms in the Armory. This could result in lead exposures for the general workforce and for children visiting this facility. One of the results exceeded the EPA lead exposure standard for children of 40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills. These levels are hazardous to children exposed to lead dust through physical contact, inhalation, or ingestion of lead dust while visiting the Armory.

(b) Lead in air. Results are shown in Table C-2, Appendix C. General area sampling was conducted in the Drill and Dining Halls, the Classroom and IFR. The results were all less than 13 µg/m³, and were below the OSHA PEL.

g. Other Chemical Hazards.

(1) Asbestos. The POC reported that the building did have some asbestos-containing building material (ACBM) but was unaware of any surveys or abatement conducted at the facility. Bulk samples were collected from pipe insulation in the Boiler Room and floor tile in the Front Lobby area. The tile was not deteriorated. Results are in Table C-3, Appendix C. Neither material was found to be ACBM. No asbestos management plan (AMP) was found. Based on experience with similar facilities, personnel may have been exposed to asbestos during brake pad replacement. It was not determined whether personnel followed the NGB standard operating procedures (SOPs) for this operation, if it was performed.

(2) Carbon Monoxide (CO). No measurements could be located for this report. Exposures from vehicle maintenance should be assessed. A vehicle exhaust ventilation system should be installed that provides at least 1,500 cubic feet per minute (cfm) exhaust at each drop in accordance with the ACGIH Industrial Ventilation Manual recommendation for 9 liter displacement turbocharged diesel engines run at 1,000 revolutions per minute. This exhaust rate is intended to accommodate large turbocharged diesel engines that are, or may be, maintained at the Armory.

(3) Welding fumes. There was no local ventilation system to control welding fumes. Exposures should be assessed.

h. Noise Hazards. The POC stated that there were no noise hazardous operations at this facility and none were being performed at the time of the site visit, therefore no measurements were taken. Our experience with similar vehicle maintenance operations is that significant noise hazards may have been present and should be evaluated.

i. Lighting. The scope of work for this survey called for measurement of lighting levels in areas where there may have been a potential problem, based on professional judgment. The NGB verbally requested that light levels be measured throughout the facilities. Due to miscommunication, the project lead visiting this site did not quantify light levels, but did use professional judgment in assessing the lighting levels. All areas were visually judged to be adequately lit.

j. Safety Hazards.

(1) Housekeeping. Poor housekeeping was evident in the former IFR. Boxes, equipment including discharged fire extinguishers, and other miscellaneous debris were strewn about the floor directly in the path of the entrance to the area as well as the top and bottom of the stairway. This represented a dangerous trip hazard. Photographs are provided in Appendix D.

(2) Fire extinguishers. Inspection tags did not confirm that fire extinguishers were being inspected on a monthly basis.

k. Physical Hazards. Our experience with similar vehicle maintenance operations is that significant ergonomics and noise hazards may have been present and should be evaluated. There were no welding screens in the vehicle maintenance area to protect personnel from sparks and intense light.

7. CONCLUSIONS. Significant health and safety concerns were: an inadequate Hearing Conservation Program and associated documentation; lack of regular maintenance of HVAC systems; exposures to lead, welding fumes, and vehicle emissions; potential exposures to asbestos; serious trip hazards; and inadequately maintained fire extinguishers. Potential CO, noise, lighting, and ergonomic hazards should be assessed.

8. RECOMMENDATIONS. The DODI 6055.1 provides RACs for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Safety and Occupational Health Programs. Health RAC 4. Develop a written Hazard Communication Program that is specific to the Horseheads Armory. Review annually to ensure any changes in policies, procedures or operations have been evaluated. Ensure that the chemical inventory sheet and Material Safety Data Sheets lists the chemicals actually used in the work area. Update these documents periodically.

b. HVAC Systems. Health RAC 4. Develop and implement an HVAC maintenance program. Include provisions for regularly scheduled maintenance.

c. Lead. Health RAC 3. Clean horizontal surfaces in the vault to the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level of 200 $\mu g/ft^2$ for lead in dust on frequently contacted surfaces. Follow the guidance in National Guard Pamphlet

420-15 and in Appendix E. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the former IFR to the EPA lead in dust standards for young children, and clean other horizontal surfaces in the vault to the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

d. Asbestos. Health RAC 3.

(1) Asbestos-containing building materials. Review the Armory and the NYARNG Environmental Office records to determine whether there are asbestos records for inspection and abatement, or if there is an AMP for Horseheads Armory. Perform an asbestos survey if no records are located. If asbestos is found, develop and implement an AMP if there is not one for the Armory.

(2) Brake pad replacement. Determine whether personnel perform this operation. If so, ensure that personnel follow the NGB SOPs.

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9. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report, please contact the undersigned at DSN 584-3118, commercial 410-436-3118, or by electronic mail: Non-Responsive@us.army.mil

Non-Responsive

Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive

MAJ, MS
Program Manager
Industrial Hygiene Field Services Program

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NYARNG IH Survey, Report No. 55-ML-048L-05/07, Horseheads Armory, Horseheads, NY, 6 Oct 05

APPENDIX A

REFERENCES

Literature Cited

1. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910, current ed. 1910.1025 (Lead). http://www.osha.gov/comp-links.html

2. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910, current ed. 1910.1001 (Asbestos). http://www.osha.gov/comp-links.html

3. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910 for General Industry and current ed. 1910.1200 (Hazard Communication). http://www.osha.gov/comp-links.html

4. American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc. (ASHRAE) Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality. http://www.ashrae.org

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6. Illuminating Engineering Society of North America, ANSI/IESNA Standard RP-1-2004, Office Lighting.

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9. Department of Health and Human Services National Toxicology Program (NTP) Substance
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11. OSHA CPL 02-02-58, 29 CFR 1926.62, Lead Exposure in Construction; Interim Final Rule-- Inspection and Compliance Procedures, December 13, 1993.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Horseheads Armory, Horseheads, NY, 6 Oct 05

12. NG Pam 420-15, Facilities Engineering, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Horseheads Armory, Horseheads, NY, 6 Oct 05

APPENDIX B

PROPOSED CRITERIA FOR LEAD

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than Federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If Soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. General air samples collected in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,

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APPENDIX C

TABLE C-1. Lead in Surface Dust Locations and Analytical Results

Wipe Sample Number	**Location of Samples**	**Result (µg/ft²)**
HHW- 01	Drill Hall – NW Corner	5.8
HHW- 02	Drill Hall – NE Corner	<2.7
HHW- 03	Drill Hall – SE Corner	24
HHW- 04	Drill Hall – SW Corner	11
HHW- 05	Drill Hall – Center	3.4
HHW- 07	Vault	380
HHW- 08	Former IFR Bullet Trap – Floor	110
HHW- 09	Former IFR Bullet Trap – Wall	<2.7
HHW- 11	Former IFR Storage Shelf	28
HHW- 12	Former IFR Supply Desk Area	7.8
HHW- 13	Former IFR Outside Door	110
HHW- 14	Dining Hall	<2.7
HHW- 15	Kitchen Stove Hood	6.8
HHW- 17	Vehicle Maintenance Area	61
HHW- 18	Storage Room	84
HHW- 19	Orderly room	6.8
HHW- 20	Front Lobby Hallway Floor	4.2
HHW- 22	1st SGT Office	32
HHW- 23	Classroom 1	7.4

TABLE C-2. Lead in Air Locations and Analytical Results

Air Sample Number	**Location of Samples**	**Result (µg/m³)**
HHA-01	Former IFR	<13
HHA-02	Classroom 1	<13
HHA-03	Drill Hall	<13
HHA-04	Dining Hall	<13

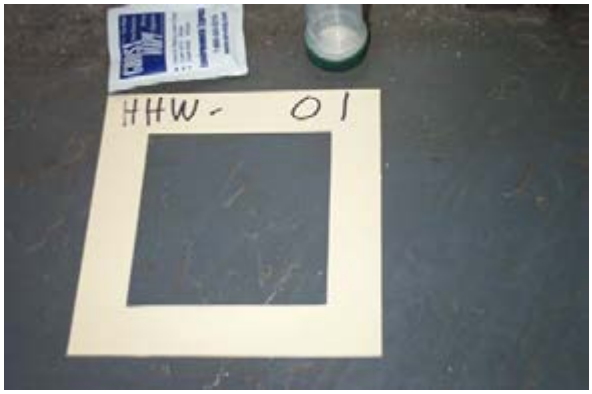
TABLE C-3. Bulk Asbestos locations and Analytical Results

Air Sample Number	**Location of Samples**	**% chrysotile/NAD = no acm detected**
HHB-01	Floor Tile, Front Lobby Area	NAD
HHB-02	Pipe Insulation Elbow, Boiler Room	NAD

APPENDIX D

PHOTOGRAPHS

NYARNG IH Survey, Horseheads Armory, Horseheads, NY, Report No. 55-ML-048L-05/07, 6 Oct 05



Drill hall – NW corner

Drill hall – NE corner

Drill hall – SW corner

Drill hall – SE corner

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Drill hall – center

Former IFR – bullet trap area floor

Former IFR – bullet trap area wall

Former IFR – storage area shelf

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Former IFR – supply desk area

Former IFR – outside door

Dining hall

Kitchen above stove

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Vehicle storage area

Orderly room

Front lobby area

1st SGT's Office

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Stairway leading to Supply Area (top)

Supply Area

Stairway leading to Supply Area (bottom)

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APPENDIX E

LEAD CLEANING GUIDANCE

CHAPTER 14: CLEANING

Cleaning: How To Do It

1. Include step-by-step procedures for precleaning, cleaning during the job, and daily and final cleanings in project design or specifications.
2. Assign responsibilities to specific workers for cleaning and for maintaining cleaning equipment.
3. Have sufficient cleaning equipment and supplies *before* beginning work.
4. If contamination is extensive, conduct precleaning of the dwelling unit. Move or cover all furniture and other objects.
5. Conduct ongoing cleaning during the job, including regular removal of large and small debris and dust. Decontamination of all tools, equipment, and worker protection gear is required before it leaves containment areas. Electrical equipment should be wiped and high-efficiency particulate air (HEPA) vacuumed, not wetted down, to minimize electrocution hazards.
6. Schedule sufficient time (usually 30 minutes to an hour) for a complete daily cleaning, starting at the same time near the end of each workday after lead hazard control activity has ceased.
7. For final cleaning, wait at least 1 hour after active lead hazard control activity has ceased to let dust particles settle.
8. Use a vacuum cleaner equipped with a HEPA exhaust filter. HEPA vacuum all surfaces in the room (ceilings, walls, trim, and floors). Start with the ceiling and work down, moving toward the entry door. Completely clean each room before moving on.
9. Wash all surfaces with a lead-specific detergent, high-phosphate detergent, or other suitable cleaning agent to dislodge any ground-in contamination, then rinse. Change the cleaning solution after every room is cleaned.
10. Repeat step 8. To meet clearance standards consistently, a HEPA vacuum, wet wash, and HEPA vacuum cycle is recommended. For interim control projects involving dust removal only, the final HEPA vacuuming step is usually not needed (see Chapter 11). Other cleaning methods are acceptable, as long as clearance criteria are met and workers are not overexposed.
11. After final cleaning, perform a visual examination to ensure that all surfaces requiring lead hazard control have been addressed and all visible dust and debris have been removed. Record findings and correct any incomplete work. This visual examination should be performed by the owner or an owner's representative who is independent of the lead hazard control contractor.
12. If other construction work will disturb the lead-based paint surfaces, it should be completed at this point. If those surfaces are disturbed, repeat the final cleaning step after the other construction work has been completed.
13. Paint or otherwise seal treated surfaces and interior floors.
14. Conduct a clearance examination (see Chapter 15).
15. If clearance is not achieved, repeat the final cleaning.

16. Continue clearance testing and repeated cleaning until the dwelling achieves compliance with all clearance standards. As an incentive to conduct ongoing cleaning and a thorough final cleaning, the cost of repeated cleaning after failing to achieve clearance should be borne by the contractor as a matter of the job specification, not the owner.
17. Do not allow residents to enter the work area until cleaning is completed and clearance is established.
18. Cleaning equipment list:
    - HEPA vacuums.
    - Detergent.
    - Waterproof gloves.
    - Rags.
    - Sponges.
    - Mops.
    - Buckets.
    - HEPA vacuum attachments (crevice tools, beater bar for cleaning rugs).
    - 6-mil plastic bags.
    - Debris containers.
    - Waste water containers.
    - Shovels.
    - Rakes.
    - Water-misting sprayers.
    - 6-mil polyethylene sheeting (or equivalent).

Chapter 14: Cleaning

I. Introduction

This chapter describes cleaning procedures to be employed following abatement and interim control work. Dust removal as an interim control measure is covered in Chapter 11.

All lead hazard control activities can produce dangerous quantities of leaded dust. Unless this dust is properly removed, a dwelling unit will be more hazardous after the work is completed than it was originally. Once deposited, leaded dust is difficult to clean effectively. Whenever possible, ongoing and daily cleaning of leaded dust during lead hazard control projects is recommended. Ongoing and daily cleaning is also necessary to minimize worker exposures.

Cleaning is the process of removing visible debris *and* dust particles too small to be seen by the naked eye. Removal of lead-based paint hazards in a dwelling unit will not make the unit safe unless excessive levels of leaded dust are also removed. This is true regardless of whether the dust was present before or generated by the lead hazard control process itself. Improper cleaning can increase the cost of a project considerably because additional cleaning and clearance sampling will be necessary. However, cleaning and clearance can be achieved routinely if care and diligence are exercised.

A. Performance Standard

Although the cleaning methods described in this chapter are feasible and have been shown to be effective in meeting clearance standards, other methods may also be used if they are safe and effective. This performance-oriented approach should stimulate innovation, reduce cost, and ensure safe conditions for both residents and workers.

B. Small Dust Particles

Dust particles that are invisible to the naked eye remain on surfaces after ordinary cleaning procedures. A visibly clean surface may contain high and unacceptable levels of dust particles and require special cleaning procedures.

C. Difficulties in Cleaning

While cleaning is an integral and essential component of any lead hazard control activity, it is also the most likely part of the activity to fail.

Several common reasons for this failure include low clearance standards, worker inexperience, high dust-producing methods, and deadlines.

1. Low Clearance Standards

Because very small particles of leaded dust are easily absorbed by the body when ingested or inhaled, a small amount can create a health hazard for young children. Therefore, "clearance standards" are extremely low for acceptable levels of leaded dust particles on surfaces after hazard control activities, and careful cleaning procedures are required. Although it is not possible to remove *all* leaded dust from a dwelling, it is possible to reduce it to a safe level.

Clearance standards are described more fully in Chapter 15. The permissible amount of leaded dust remaining on each of the following surfaces following lead hazard work is as follows:

- 100 µg/ft^2 on floors.
- 500 µg/ft^2 on interior window sills (stools).
- 800 µg/ft^2 on window troughs (the area where the sash sits when closed).
- 800 µg/ft^2 on exterior concrete.

These levels are based on wipe sampling. Clearance testing determines whether the premises or area are clean enough to be reoccupied after the completion of a lead paint hazard control project. A cleaned area may not be reoccupied until compliance with clearance standards has been established. To prevent delays, final testing and final cleaning activities should be coordinated.

2. Worker Inexperience

To understand the level of cleanliness required to meet the established clearance standards for hazard control cleanup, new hazard control personnel often require a significant reorientation to cleaning. Many construction workers are used to cleaning up only dust that they can see, not the invisible dust particles that are also important to remove.

3. High Dust-Producing Methods and/or Inadequate Containment

High dust-generating methods, inadequate containment during hazard control work, and poor work practices can all make achievement of clearance particularly difficult. Work practices necessary to prevent spreading of dust throughout a dwelling (e.g., by tracking dust out of work areas) are essential but sometimes tedious. Essential work practices are sometimes mistakenly considered to be "flexible guidelines" rather than necessary standards that are designed to ensure that the job is completed, not only safely, but also on time and within budget.

4. Deadlines

Daily and final cleanings have sometimes been compromised due to project deadlines, since cleaning comes at the end of the job. Hurried efforts often result in clearance failure. Delayed and over-budget hazard control projects are often the result of repeated, unplanned recleanings that are necessitated by inadequate containment and sloppy work practices.

II. Coordination of Cleaning Activities

A. Checklist

The owner or contractor may use the following cleaning checklist before any lead hazard control activity:

- ✓ Is the critical importance of cleaning in a hazard control project understood?
- ✓ Have all workers been trained and certified for hazard control work?
- ✓ Have the precleaning, daily, and final cleanings been scheduled properly and coordinated with the other participants in the hazard control process?
- ✓ Have cleaning equipment and materials been obtained?
- ✓ Do the workers know how to operate and maintain special cleaning equipment, and do they have directions for the proper use of all cleaning materials?
- ✓ Have all workers carefully studied the step-by-step procedures for precleaning (if needed), in-progress cleaning, and daily and final cleanings?
- ✓ Are all workers properly protected during the cleaning processes (see Chapter9)?
- ✓ Have provisions been made to properly contain and store potentially hazardous debris (see Chapter 10)?
- ✓ Have dust-clearance testing and related visual inspections been arranged (see Chapter 15)?
- ✓ Are the clearance criteria to be met fully understood?
- ✓ Have all appropriate surfaces been properly painted or otherwise sealed?
- ✓ Have appropriate records been maintained that document participants' roles in the hazard control project?

B. Equipment Needed for Cleaning

The following equipment is needed to conduct cleaning: high-efficiency particulate air (HEPA) vacuums and attachments (crevice tools, beater bar for cleaning rugs), detergent, waterproof gloves, rags, sponges, mops, buckets, 6-mil plastic bags, debris containers, waste water containers, shovels, rakes, water-misting sprayers, and 6-mil polyethylene plastic sheeting (or equivalent).

C. Waste Disposal

Regulations governing hazardous and nonhazardous waste storage, transportation, and disposal affect both the daily and final cleaning procedures. The hazard control contractor and the disposal contractor should work together to establish formal written procedures, specifying selected containers, storage areas, and debris pickups, to ensure that all relevant regulations are met.

III. Cleaning Methods and Procedures

Many of the special cleaning methods and procedures detailed in this chapter are not standard operating procedure for general home improvement contractors. Therefore, project designers, responsible agencies, or owners must ensure that contractors follow the methods and procedures recommended herein or specially designed alternative procedures, even though some may appear to be redundant and unnecessary. These methods have been shown to be feasible and effective in many situations and skipping steps in the cleaning procedures can be counterproductive.

A. Containment

Because of the difficulty involved in the removal of fine dust, dust generated by hazard control work should be contained to the extent possible to the inside of work areas. Inadequately constructed or maintained containment or poor work practices will result in additional cleaning efforts, due to dust that has leaked out or been tracked out of the work area (see Chapter 8).

B. Basic Cleaning Methods: Wet Wash and Vacuum Cleaning Techniques

Because leaded dust adheres tenaciously, especially to such rough or porous materials as weathered or worn wood surfaces and masonry surfaces (particularly concrete), workers should be trained in cleaning methods. As a motivator, some contractors have awarded bonuses to workers who pass clearance the first time.

Two basic cleaning methods have proven effective, when used concurrently, in lead-based paint hazard control projects: a special vacuum cleaner equipped with a HEPA exhaust filter, followed by wet washing with special cleaning agents and rinsing, followed by a final pass with the HEPA vacuum.

Although HEPA filtered vacuums and trisodium phosphate (TSP) cleaners have been considered the standard cleaning tools for lead hazard control projects, new research, discussed under the "Alternatives Methods" section in this chapter, suggests that other tools and products may also be effective in efficiently cleaning dust while providing adequate worker protection from airborne exposure risks. Some of these innovations may even be superior.

1. HEPA Vacuuming

HEPA vacuums differ from conventional vacuums in that they contain high-efficiency filters that are capable of trapping extremely small, micron-sized particles. These filters can remove particles of 0.3 microns or greater from air at 99.97 percent efficiency or greater. (A micron is 1 millionth of a meter, or about 0.00004 inches.) Some vacuums are equipped with an ultra-low penetration air (ULPA) filter that is capable of filtering out particles of 0.13 microns or greater at 99.9995 percent efficiency. However, these ULPA filters are slightly more expensive, and may be less available than HEPA filters.

Vacuuming with conventional vacuum machines is unlikely to be effective, because much of the fine dust will be exhausted back into the environment where it can settle on surfaces. A recent Canadian study revealed that fine-dust air levels were exceedingly high when a standard portable vacuum with a new bag was used, although partially filled bags were found to be more efficient (CMHC, 1992). Considerations for the proper use of a HEPA vacuum are listed below.

Operating Instructions

There are a numerous manufacturers of HEPA vacuums. Although all HEPA vacuums operate on the same general principle, they may vary considerably with respect to specific procedures, such as how to change the filters. To ensure the proper use of equipment, the manufacturer's operating instructions should be carefully followed and if possible, training sessions arranged with the manufacturer's representative.

Although HEPA vacuums have the same "suction" capacity as ordinary vacuums that are comparably sized, their filters are more efficient. Improper cleaning or changing of HEPA filters may reduce the vacuum's suction capability.

Special Attachments

Because the HEPA vacuum will be used to vacuum surfaces other than floors, operators should buy attachments and appropriate tool kits for use on different surfaces—such as brushes of various sizes, crevice tools, and angular tools.

Selecting Appropriate Size(s)

HEPA vacuums are available in numerous sizes, ranging from a small lunchbucket-sized unit to track-mounted systems. Two criteria for size selection are the size of the job and the type of electrical power available. Manufacturer recommendations should be followed.

Wet-Dry HEPA Vacuums

Some hazard control contractors have found the wet-dry HEPA vacuums to be particularly effective in meeting clearance standards. These vacuums are equipped with a special shut-off float switch to protect the electrical motor from water contact.

Prefilters

HEPA filters are usually used in conjunction with a prefilter or series of prefilters that trap the bulk of the dust in the exhaust airstream, particularly the larger particles. The HEPA filter traps most of the remaining small particles that have passed through the prefilter(s). All filters must be maintained and replaced or cleaned as specified in the manufacturer's instructions. Failure to do so may cause a reduction in suction power (thus reducing the vacuum's efficiency and effectiveness). Failure to change prefilters may damage the vacuum motor and will also shorten the service life of the HEPA filter, which is far more expensive than the prefilters.

HEPA Vacuuming Procedures

Surfaces frequently vacuumed include ceilings, walls, floors, windows, interior and exterior sills, doors, heating, ventilation, and air conditioning (HVAC) equipment (heating diffusers, radiators, pipes, vents), fixtures of any kind (light, bathroom, kitchen), built-in cabinets, and appliances.

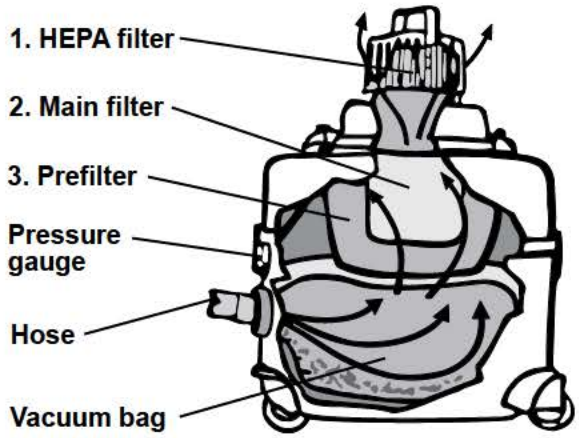
To aid in dislodging and collecting deep dust and lead from carpets, the HEPA vacuum must be equipped with a beater bar (agitator head) that is fixed to the cleaning head. This bar should be used on all passes on the carpet face during dry vacuuming (see Chapter 11 for details on carpet and furniture cleaning).

All rooms and surfaces should be included in the HEPA vacuum process, except for those that (1) were found not to have lead-paint hazards *and* were properly separated from work areas before the process began (see Chapter 8), or (2) were never entered during the process. Porches, sidewalks, driveways, and other exterior surfaces should be vacuumed if exterior hazard control work was conducted, or if debris was stored or dropped outside. Vacuuming should begin on the ceilings and end on the floors, sequenced to avoid passing through rooms already cleaned, with the dwellings' entryway cleaned last.

Emptying the HEPA Vacuum

Used filters and vacuumed debris are potentially hazardous waste and should be treated accordingly (see Chapter10). Therefore, operators should use extreme caution when opening the HEPA vacuum for filter replacement or debris removal to avoid accidental release of accumulated dust into the environment. This may occur, for example, if the vacuum's seal has been broken and the vacuum's bag is disturbed.

Figure 14.1a Vacuum With a HEPA Filter.



Parts of a HEPA-vacuum

Most HEPA-vacuums have three filters: HEPA filter, main filter, and prefilter. Debris gets sucked in through the hose into the vacuum bag. The air and dust get filtered through the prefilter, the main filter, and the HEPA filter. The HEPA filter captures the lead dust before the air is released into the work area again.

Operators should also wear a full set of protective clothing and equipment, including appropriate respirators, when performing this maintenance function, which should be done in the containment area or offsite.

2. Wet Detergent Wash

Several types of detergents have been used to remove leaded dust. Those with a high-phosphate content (containing at least 5 percent trisodium phosphate, also known as TSP) have been found to be effective when used as part of the final cleaning process (Milar, 1982). TSP detergents are thought to work by coating the surface of dusts with phosphate or polyphosphate groups which reduces electrostatic interactions with other surfaces and thereby permits easier removal. Because of environmental concerns some States have restricted the use of TSP, and some manufacturers have eliminated phosphates from their household detergents. However, high-TSP detergents can usually be found in hardware stores and may be permitted for limited use, such as lead hazard control.

Other non-TSP cleaning agents developed specifically for removing leaded dust have also been found to be effective (possibly more effective than TSP) in limited trials by several

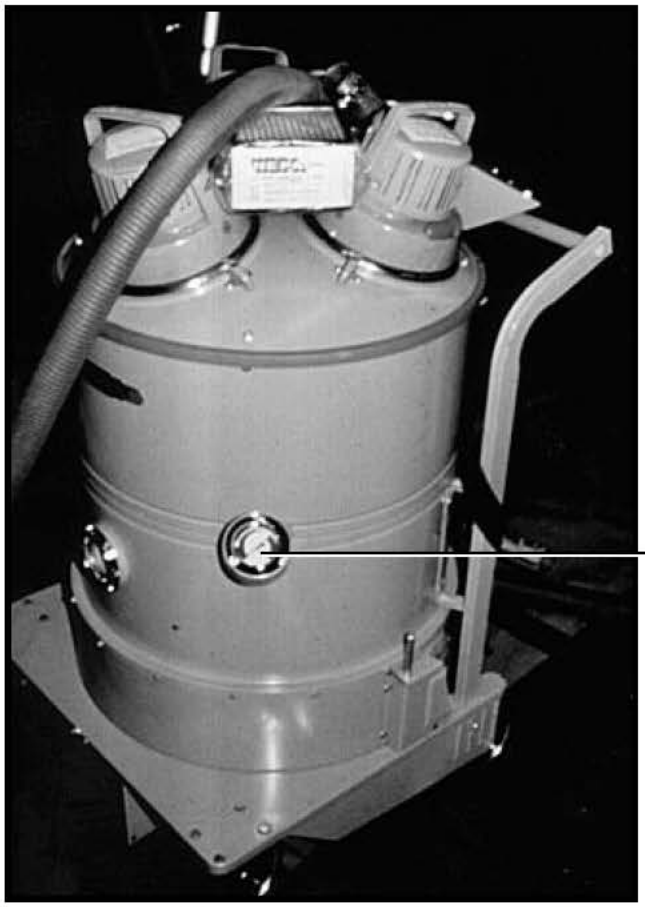
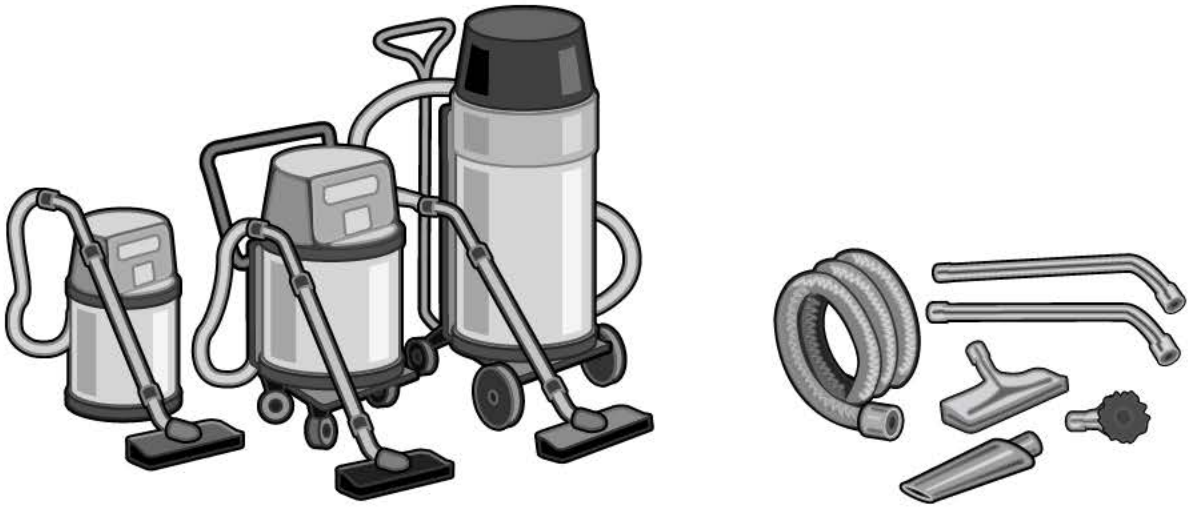


Figure 14.1b Pressure Gauge Indicator Shows When Filters Require Changing.

Figure 14.2 HEPA Vacuum Sizes and Tools.



investigators (Grawe, 1993; Wilson, 1993) and may also be safer, since TSP is a skin and eye irritant. See section VII for more information on non-TSP detergents. Proper procedures for using high-phosphate detergents also apply to most other types of detergents and include the following steps:

Manufacturer's Dilution Instructions

Users of cleaning agents for leaded dust removal should follow manufacturer's instructions for the proper use of a product, especially the recommended dilution ratio. Even diluted, trisodium phosphate is a skin irritant and users should wear waterproof gloves. Eye protection should also be worn, and portable eyewash facilities should be located in or very near the work area. Consult manufacturer's directions for the use of other detergents.

Appropriate Cleaning Equipment

Because a detergent may be used to clean leaded dust from a variety of surfaces, several types of application equipment are needed, including cleaning solution spray bottles, wringer buckets, mops, variously sized hand sponges, brushes, and rags. Using the proper equipment on each surface is essential to the quality of the wet-wash process.

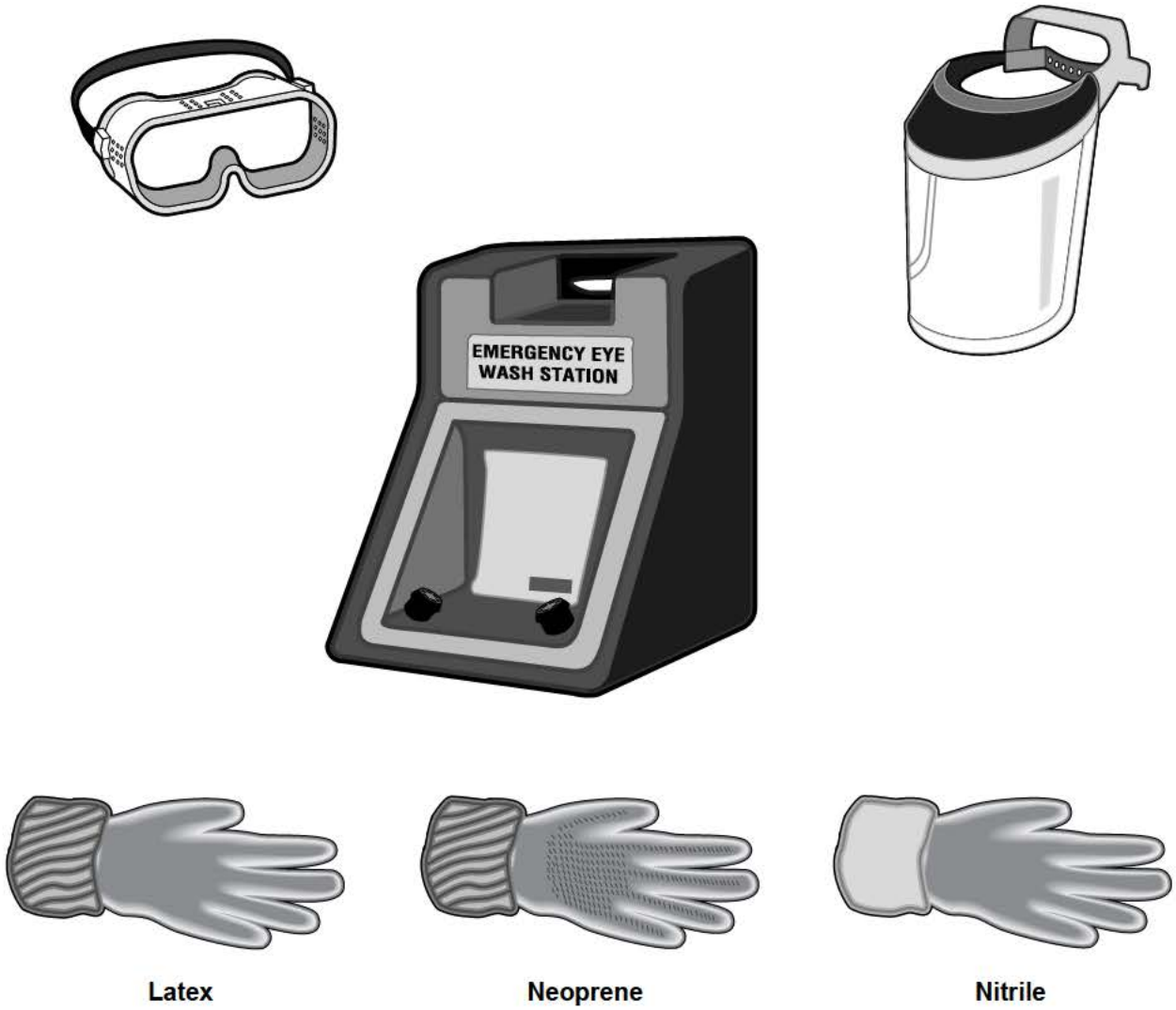
Proper Wet-Cleaning Procedures

At the conclusion of the active lead hazard control process and the initial HEPA vacuuming, all vacuumed surfaces should be thoroughly and completely washed with a high-phosphate solution or other lead-specific cleaning agent (or equivalent) and rinsed. Select a detergent that does not damage existing surface finishes (TSP may damage some finishes). Work should proceed from ceilings to floors and sequenced to avoid passing through rooms already cleaned.

Changing Cleaning Mixture

Many manufacturers of cleaners will indicate the surface area that their cleaning mixture will cover. To avoid recontaminating an area by cleaning it with dirty water, users should follow manufacturer-specified surface-area limits. However, regardless of manufacturers' recommendations, the cleaning mixture should be changed after its use for each room. As a rule of thumb, 5 gallons should be used to clean no

Figure 14.3 Goggles, Face Shields, Gloves, and Eye Wash Facilities Should Be Available When Used With Chemicals Such as TSP.



more than 1,000 square feet. Used cleaning mixture is potentially hazardous waste (see Chapter 10); consult with your local water and sewage utility for directions on its proper disposal. Wash water should never be poured onto the ground. The wash water is usually filtered and then poured down a toilet (if the local water authority approves).

3. The HEPA/Wet Wash/HEPA Cycle

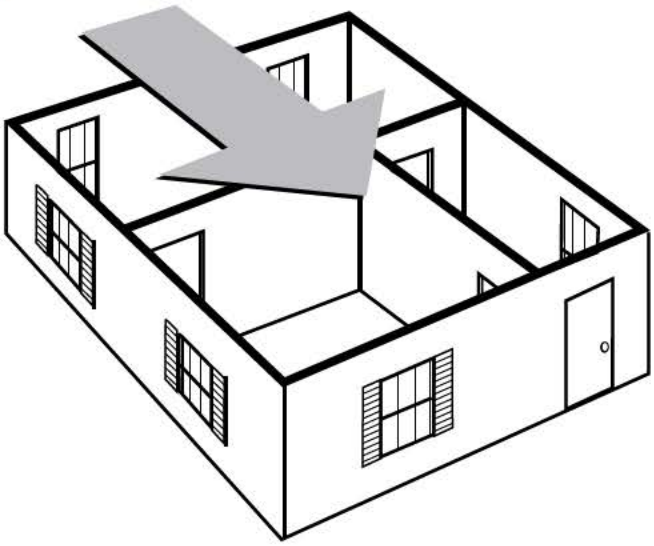
Typical Procedures

The usual cleaning cycle that follows lead hazard control activities is called the HEPA vacuum/wet wash/HEPA cycle and is applied to an entire affected area as follows:

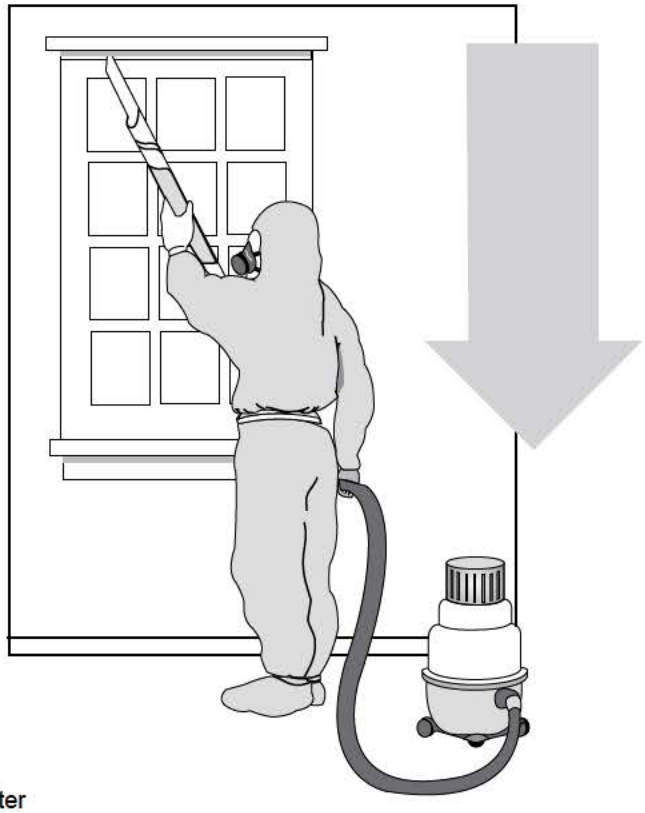
- First, the area is HEPA vacuumed.

Figure 14.4a The HEPA Vacuum, Wet Wash, HEPA Vacuum Cycle Helps in Meeting Clearance Standards.

HEPA vacuum all surfaces
Start at the end farthest from the main entrance/exit. As you vacuum, move towards the main exit and finish there.



Begin at the top of each room and work down. For example, start with the top shelves, the top of the woodwork, and so on, and work down to the floor. Do every inch of the windows, especially the window troughs.



Courtesy: Alice Hamilton Occupational Health Center

- Next, the area is washed down.
- After drying, the area is again HEPA vacuumed.

The rationale for this three-pass system is as follows:

- The first HEPA vacuum removes as much dust and remaining debris as possible.
- The wet wash further dislodges dust from surfaces.
- The final HEPA cycle removes any remaining particles dislodged but not removed by the wet wash.

Single-Pass Wet Wash/HEPA Vacuum

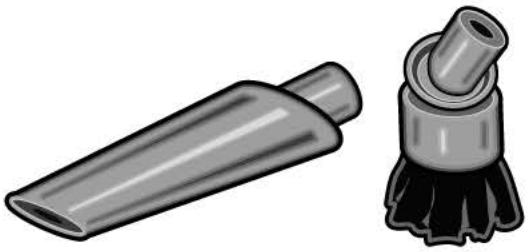
Some lead hazard control contractors have found HEPA spray cleaner vacuums to be a cost-effective alternative to the three-pass system. Similar to home carpet-cleaning machines, these vacuums simultaneously deliver a solution to the surface and recover the dirty solution. Theoretically, this process combines two of the steps in the HEPA vacuum/wet wash/HEPA cycle into one step. While anecdotal evidence indicates that the spray cleaner wet wash/HEPA is effective for some uses, limitations have been noted in its use for ceilings, vertical surfaces, and hard to reach areas. This device may be used as long as clearance standards are met.

Figure 14.4b (continued)

Use special attachments
Use the rubber cone where the floor meets the baseboard and along all the cracks in the floor boards. Use the brush tool for walls and woodwork.

Use the wheeled floor nozzle for bare floors and the carpet beater for rugs.

Move slowly
Vacuum slowly so the HEPA vacuum can pick up all the lead dust.



Rubber Cone **Dust Brush**

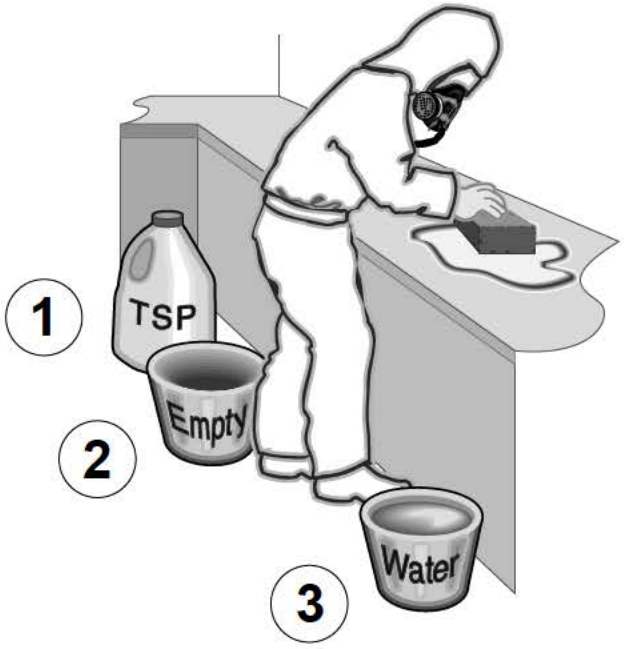
Powered Carpet Beater

Wheeled Floor Nozzle

Figure 14.4c (continued)

Wash all surfaces with suitable detergents

Wash *all surfaces* in the work area with suitable detergents, including areas that had been covered with plastic. Some wallpaper should only be HEPA vacuumed, since it may be damaged by the detergent.



Wipe All Surfaces

Wet Mop Floor

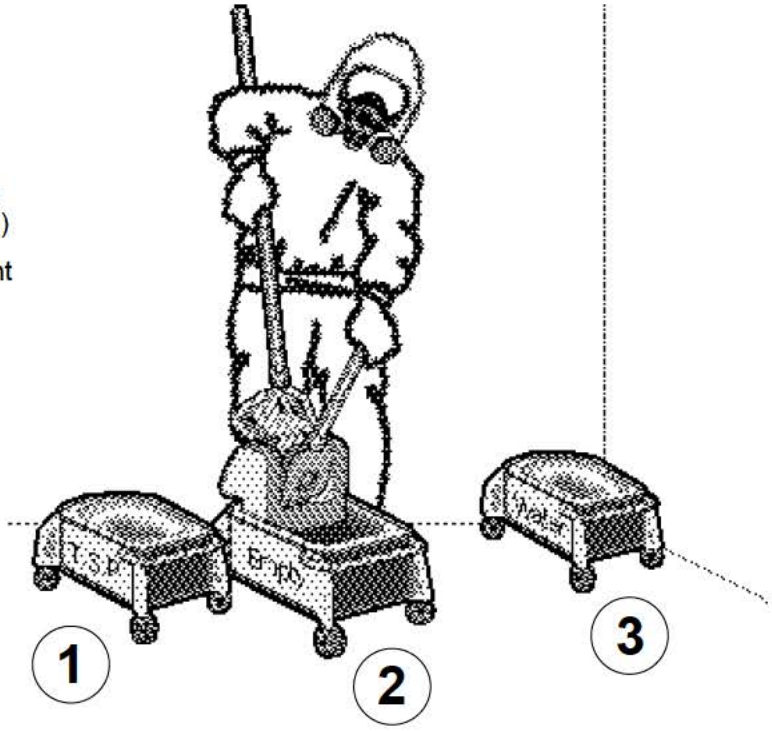
Don't Dry Sweep

Figure 14.4c (continued)

Use the 3-Bucket System.

To wash: Use string mops and mop buckets with wringers. (Some experts say NEVER use a sponge mop on the floor. Sponge mops may only push the lead around on the floor, not remove it.)

Dip the string mophead in the detergent wash in bucket #1. Mop the floor.



Squeeze out the mophead in empty bucket #2. Return to bucket #1 for more detergent solution and continue mopping. Repeat.

Use the third bucket for rinsing the floor.

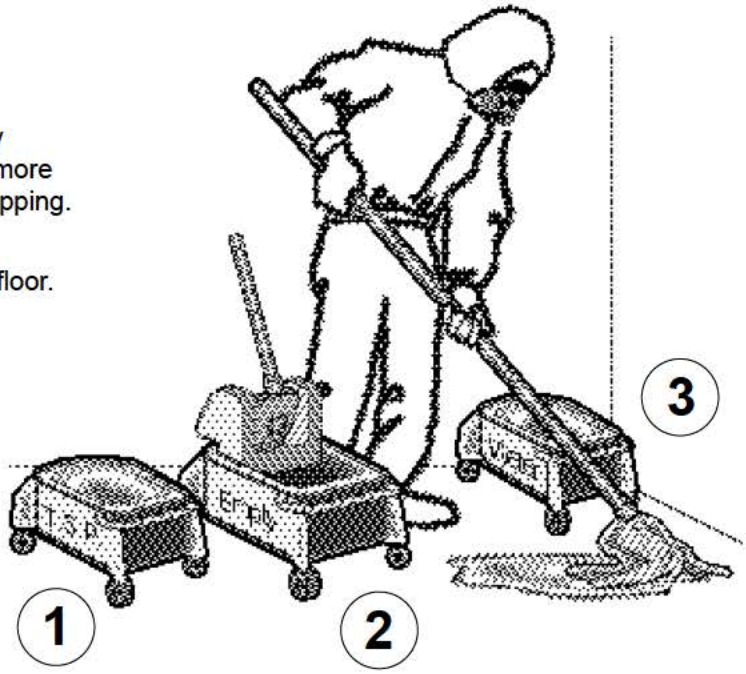
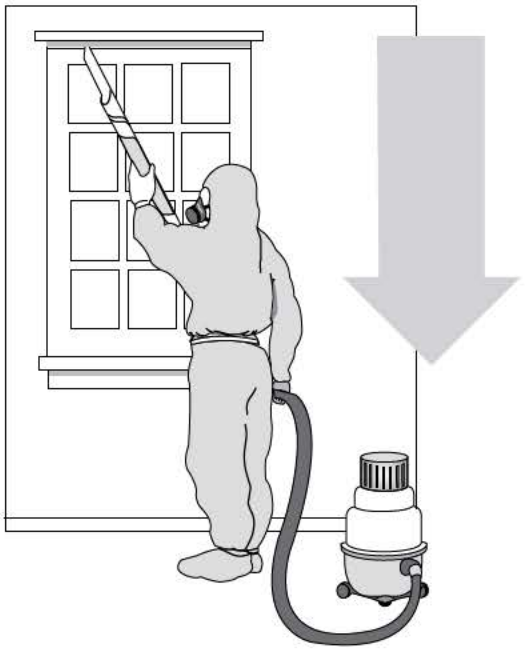


Figure 14.4d (continued)

HEPA vacuum all surfaces a final time
HEPA vacuum *all surfaces* in the work area, including areas that had been covered with plastic.

Starting at the far end, work towards the decontamination area. Begin with ceilings or the top of the walls and work down, cleaning the floors last. Do every inch of the windows, especially the troughs. Use the corner tool to clean where the floor meets the baseboard and all the cracks in the floor boards. Use the brush tool for the walls. Move slowly and carefully to get all the dust.



4. Sealing Floors

Before clearance, all floors without an intact, nonporous coating should be coated. Sealed surfaces are easier for residents to clean and maintain over time than those that are not sealed. Wooden floors should be sealed with a clear polyurethane or painted with deck enamel or durable paint. Vinyl tile, linoleum, and other similar floors should be sealed with an appropriate wax. Concrete floors should be sealed with a concrete sealer or other type of concrete deck enamel. However, if these floors are already covered by an effective coat of sealant, it may be possible to skip this step.

As an alternative to sealing, floors may be covered with new vinyl tile, sheet vinyl, linoleum flooring, or the equivalent to create a more permanent cleanable surface. New surfaces should be cleaned with a cleaning solution that is appropriate for that type of surface.

IV. Order of Cleaning Procedures During Lead Hazard Control

The special cleaning procedures to be followed during a lead-based paint hazard control project are discussed in chronological order below. Skipping steps in the process may result in failure to meet post-lead hazard control clearance standards.

A. Precleaning Procedures

Precleaning (i.e., cleaning conducted before lead hazard control is begun) is necessary only in dwelling units that are heavily contaminated with paint chips. Precleaning involves the removal of large debris and paint chips, followed by HEPA vacuuming. These steps may be followed by removal of occupant personal possessions, furniture, or carpeting, depending on the

Figure 14.5 Single-Pass HEPA Vacuum/Wet Wash Technology.

Worksite Preparation Level selected (see Chapter 8). If the furniture will not be cleaned, it should be removed from the area or covered with plastic prior to beginning the precleaning procedure. Carpeting should always be misted before its removal to control the generation of hazardous dust.

It is usually the resident's responsibility to remove most of his or her personal possessions. However, if necessary, owners or project management should be prepared to complete this activity before lead hazard control work begins. As a last resort, the contractor may pack any remaining belongings and carefully seal and move the boxes, supplying all necessary boxes, packing materials, and staff to complete the task. Following cleaning and clearance, the contractor should return all packed items to their appropriate places. Leaving these tasks to the contractor may be expensive and inefficient, since the contractor will need to be insured for this function if the occupant's

Figure 14.6 Precleaning Is Needed in Areas Where Contamination and Deterioration Are High.

belongings are damaged. Additionally, moving furniture, rugs, drapes, and other items owned by the occupant could increase leaded dust levels. Clearance should be conducted after cleaning but before resident items are moved back in.

B. Ongoing Cleaning During the Job

Periodic HEPA vacuuming during the lead hazard control work may be necessary to minimize tracking of dust and paint chips from one area to another (e.g., when a large amount of paint chips or dust is being generated).

C. Daily Cleaning Procedures

Cleaning activity should be scheduled at the end of each workday when all active lead hazard control throughout the dwelling has ceased. Sufficient time must be allowed for a thorough and complete cleaning (usually about 30 minutes to an hour). Daily cleaning helps achieve clearance dust levels by minimizing problems that may otherwise occur during final cleaning and limiting worker exposures. While daily cleaning can be skipped in vacant dwelling units, it is required when occupants will return in the evening. Under no circumstances should debris or plastic be left outside overnight in an unsecured area, even if the dwelling is vacant. Daily cleaning should consist of:

- Removing large debris.
- Removing small debris.
- HEPA vacuuming, wet clean, HEPA vacuuming (horizontal surfaces only).
- Cleaning exterior.
- Patching and repairing plastic sheeting.
- Securing debris/plastic.

Figure 14.7 Plastic Sheeting Should Be Repaired as Part of Daily Cleanup.

1. Large Debris

Large demolition-type debris (e.g., doors, windows, trim) should be wrapped in 6-mil plastic, sealed with tape, and moved to a secure area on the property designated for waste storage. All sharp corners, edges, and nails should be hammered down to prevent injury and minimize the tearing of plastic. It is not necessary to wrap each individual piece of debris in plastic if the entire load can be wrapped. A secure area either outside or inside the property must be designated as a temporary waste-storage area. Covered, secured, and labeled dumpsters placed on or near the property may be used. Proper segregation of waste should be enforced at this time (see Chapter 10).

2. Small Debris

After being misted with water, small debris should be swept up, collected, and disposed of properly. The swept debris should be placed in double 4-mil or single 6-mil polyethylene (or equivalent) plastic bags, properly sealed, and moved to the designated trash storage area. Trash bags should not be overloaded; overloaded bags may rupture or puncture during handling and transport.

3. Exterior Cleaning

Areas potentially affected by exterior lead hazard control should be protected via a containment system (see Chapter 8). Because weather can adversely affect the efficacy of exterior

containment, the surface plastic of the containment system should be removed at the end of each workday. On a daily basis, as well as during final cleaning, the immediate area should be examined visually to ensure that no debris has escaped containment. Any such debris should be raked or vacuumed and placed in single 6-mil or double 4-mil plastic bags, which should then be sealed and stored along with other contaminated debris. HEPA vacuuming is appropriate for hard exterior surfaces, not soil.

4. Worker Protection Measures

General worker protection measures are discussed in Chapter 9. Studies indicate that during daily cleaning activities, especially while wet sweeping, workers may be exposed to high levels of airborne dust. Therefore, workers should wear protective clothing and equipment, especially appropriate respirators.

5. Maintaining Containment

The integrity of the plastic sheeting used in a lead hazard control project must be maintained. During their daily cleaning activities, workers should monitor the sheeting and immediately repair any holes or rips with 6-mil plastic and duct tape.

V. Order of Final Cleaning Procedures After Lead Hazard Control

Before treated surfaces can be painted or sealed, final cleaning procedures must be completed. Because airborne dust requires time to settle, the final cleaning process should start no sooner than 1 hour after active lead hazard control has ceased in the room. See Appendix 11 for details regarding dust settling.

A. Final Cleaning

As the first stage in the final cleaning, floor plastic should be misted and swept as detailed earlier in this chapter. Upper-level plastic, such as that on cabinets and counters, should be removed first, after it has been misted with water *and cleaned*. All plastic should be folded carefully from the corners/ends to the middle to trap any remaining dust. Next, remove both layers of plastic from the floor.

Plastic sheets used to isolate contaminated rooms from noncontaminated rooms should remain in place until after the cleaning and removal of other plastic sheeting; these sheets may then be misted, cleaned, and removed last.

Removed plastic should be placed into double 4-mil or single 6-mil plastic bags, or plastic bags with equivalent (or better) performance characteristics, which are sealed and removed from the premises. As with daily cleanings, this plastic-removal process usually requires workers to use protective clothing and respirators.

After the plastic has been removed from the contaminated area, the entire area should be cleaned using the HEPA/wet wash/HEPA cycle, starting with the ceiling and working down to the floor. After surfaces are repainted or sealed, a final HEPA/wet wash/HEPA cycle may be necessary if accumulated dust caused by other work is visible.

1. Decontamination of Workers, Supplies, and Equipment

Decontamination is necessary to ensure that worker's families, other workers, and subsequent properties do not become contaminated. Specific procedures for proper decontamination of equipment, tools, and materials prior to their removal from lead hazard control containment areas should be implemented, as described below and in Chapters 9 and 10.

Work clothing, work shoes, and tools should not be placed in a worker's automobile unless they have been laundered or placed in sealed bags. All vacuums and tools that were used should be wiped down using sponges or rags with detergent solutions.

Consumable/disposable supplies, such as mop heads, sponges, and rags, should be replaced, after each dwelling is completed. Soiled items should be treated as contaminated debris (see Chapter 10).

Figure 14.8a Pick Up Corners of Plastic Sheeting.

Figure 14.8b Fold Plastic Inward.

Durable equipment, such as power and hand tools, generators, and vehicles, should be cleaned prior to their removal from the site; the cleaning should consist of a thorough HEPA vacuuming followed by washing.

B. Preliminary Visual Examination

After the preliminary final cleaning effort is completed, the certified supervisor should visually evaluate the entire work area to ensure that all work has been completed and all visible dust and debris have been removed. While the preliminary examination may be performed by the lead hazard control supervisor, contractor, or owner as a preparatory step before the final clearance examination, it does not replace the independent visual assessment conducted during clearance.

If the visual examination results are unsatisfactory, affected surfaces must be retreated and/or recleaned. Therefore, it is more cost effective to have the supervisor rather than the clearance examiner perform this initial examination.

C. Surface Painting or Sealing of Nonfloor Surfaces

The next step of the cleaning process is painting or otherwise sealing all treated surfaces except floors.

Surfaces, including walls, ceilings, and woodwork, should be coated with an appropriate primer and repainted. Surfaces enclosed with vinyl, aluminum coil stock, and other materials traditionally not repainted are exempt from the painting provision.

D. Final Inspection

The final clearance evaluation should take place at least 1 hour after the final cleaning. Clearance has three purposes: 1) to ensure that the lead hazard control work is complete, 2) to detect the presence of leaded dust, and 3) to make sure that all treated surfaces have been repainted or otherwise sealed. Clearance is usually performed after the sealant is applied to the floor. See Chapter 15 for information on clearance examination procedures.

E. Recleaning After Clearance Failure

If after passing the final visual examination, the dwelling unit fails the clearance wipe dust tests,

the HEPA/wet wash/HEPA cleaning cycle should be carefully and methodically repeated. Failure is an indication that the cleaning has not been successful. Recleaning should be conducted under the direct supervision of a certified supervisor. Care should be exercised during the recleaning of "failed" surfaces or components to avoid recontaminating "cleared" surfaces or components.

VI. Cleaning Cost Considerations

An important consideration in determining lead hazard control strategies and methods is the cost and difficulty of required daily and final cleanup operations and the ease with which one can meet dust-clearance standards. A general rule of thumb is that lead hazard control strategies that generate the most dust will have higher cleanup costs and higher initial clearance test-failure rates.

A. Initial Clearance Test Failure Rates

The likelihood of passing final dust-clearance tests is highly correlated with the chosen intervention strategy, methods, and care exercised by the contractor. For example, in one study (HUD, 1991) initial wipe-test failure rates were 14 percent for interior window sills, 19 percent for floors, and 33 percent for window troughs. The pass/fail rates for each surface were strongly associated with the dwelling unit abatement strategy employed. Chemical removal and hand-scraping strategies experi-enced higher failure rates than replacement and encapsulation/enclosure strategies (see Table 14.1).

However, results of the HUD demonstration project indicated that clearance failure is not solely related to abatement method. The report stated that "the diligence and effectiveness of an abatement contractor's cleaning process ... had a major impact on ... the likelihood of the dwelling unit to pass the final wipe test clearance" (HUD, 1991).

Figure 14.8c Dispose of Plastic Sheeting in a Plastic Trash Bag.

B. Key Factors In Effective Cleaning

Effective cleaning will be aided by adequate sealing of surfaces with polyethylene sheeting prior to lead hazard control, proper daily cleaning practices, good worker training, and attention to detail. Where poor worksite preparation is employed, additional cleaning may be required to meet clearance.

C. Special Problems

Surfaces such as porous concrete, old porous hardwood floors, and areas such as corners of rooms and window troughs pose especially difficult cleaning challenges. Porous concrete and corners of rooms normally require additional vacuuming to achieve an acceptable level of cleanliness.

The lead hazard control strategy of enclosure is frequently chosen for window troughs and for old porous hardwood floors due to the difficulty of adequately cleaning these surfaces. This

option provides not only a clean surface but a more permanently cleanable surface for dwelling occupants to maintain.

VII. Alternative Methods

Alternatives to the recommended cleaning tools and practices discussed in this chapter are available, some having significant potential for increasing effectiveness and lowering costs.

A recent Canadian study (CMHC, 1992) evaluated the effectiveness of contaminated dust cleanup activities using tools that would generally be available to construction contractors and homeowners. Vinyl flooring and carpeting were cleaned using several wet/dry vacuuming systems, sweeping, and wet mopping. The study found that regular vacuums with empty bags send a steady stream of fine particles into the air, while vacuums with partially filled bags were more efficient. This finding suggests the necessity for HEPA vacuums. Other vacuums may be used if workers do not experience increased exposures, if compliance with clearance standards is achieved, and if a variance from OSHA regulation (29 CFR 1926.62 (h)(4)) is obtained by the contractor or employer (if required).

Agitator heads on vacuums were demonstrated to significantly enhance vacuum effectiveness on carpets in cleaning up fine dust without increasing airborne dust levels. Table 14.2 suggests that a central vacuum with an agitator head is most efficient at removing dust and minimizing recontamination, probably because the vacuum exhaust is blown away from living areas. Because many houses do not have central vacuuming systems, a portable HEPA vacuum is the next best choice (see Table 14.2). Vacuums without agitator heads appeared to perform relatively poorly on carpets.

A. Vacuums

Regular (non-HEPA) dry vacuums potentially produce hazardous levels of airborne dust and therefore should be avoided. Externally exhausted vacuum units with adequate dust-retaining capability may be used. The OSHA lead standard requires the use of HEPA vacuum equipment (see 29 CFR 1926.62 (h)(4), which states, "where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters").

B. Trisodium Phosphate and Other Detergents

TSP detergents have been used successfully for a number of years in lead hazard control work. However, in recent years, other new cleaning agents have been developed specifically for leaded dust removal. The need for alternatives has been fueled by the fact that TSP is an eye

Table 14.1 Initial Cleaning Wipe-Test Failure Rates for Various Abatement Strategies

Dust Test Location	Hand Scrape w/Heat Gun	Chemical Removal	Enclosure	Encapsulation	Replacement	All Methods
Floors	28.8%	22.7%	20.0%	13.8%	12.5%	19%
Sills	24.4%	24.1%	8.2%	4.8%	17.4%	14%
Wells	44.5%	45.7%	23.7%	25.7%	21.0%	33%

Source: U.S. Department of Housing and Urban Development (August 1991) The HUD Lead-Based Paint Abatement Demonstration (FHA)

and skin irritant and is increasingly restricted from household use and unavailable in many local jurisdictions. TSP also damages some finishes. Recently reported trials of two new products suggest that alternative lead-specific cleaning agents may be more effective and safer than TSP (Grawe, 1993; Wilson, 1993).

These *Guidelines* do not prohibit the use of non-TSP cleaning agents. HUD encourages further evaluation of alternative cleaning methods. Use of any cleaning agent that results in compliance with clearance criteria is encouraged.

Table 14.2 Mass Removal Efficiency for Extended Vacuuming Cycles

Cycle Number	Mass Removal Efficiency Percentages			
	Cleaning Method			
	Central Vacuum—Plain Tool	Central Vacuum—Agitator Head	HEPA Vacuum	Portable Vacuum—Plain Tool
1	34.7	71.0	55.4	17.5
2	47.0	80.2	61.2	23.0
3	51.9	85.9	66.3	26.6
4	56.0	87.8	67.0	29.4
5	59.3	88.9	72.1	32.5
6	61.6	91.2	74.4	34.9
7	63.8	93.1	76.4	36.5
8	67.5	95.4	77.5	38.1
9	67.5	97.7	78.7	40.1
10	67.2	100.0	80.2	41.7
11		102.3	80.2	41.7
12		104.6	84.1	44.8
13		104.6	84.5	46.8
14		103.8	84.5	48.4
15				49.6
16				50.8
17				52.4
18				53.6
19				54.4
20				55.2

Source: Canada Mortgage and Housing Corporation: Saskatchewan Research Council (December 1992) *Effectiveness of Clean-up Techniques for Leaded Paint Dust*

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Horseheads Readiness Center
Horseheads, NY 14845

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

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Project No. 1061-15
January 31, 2013

Bonus Environmental, LLC

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APPENDICES

January 31, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Horseheads Readiness Center, Horseheads, NY 14845

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Horseheads Readiness Center located at 128 Colonial Drive in Horseheads, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 26, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Horseheads Readiness Center was constructed in 1978, and is an Army National Guard armory comprised of offices, locker rooms, storage rooms, a classroom, a drill hall, a kitchen, a boiler room, a fitness room, a Supply room, a break room, maintenance areas (used for storage), and a former indoor firing range (currently used as storage). The point of contact for the approximately 32,312 ft² Horseheads Readiness Center is Mr. Raymond Carmody. Six (6) full-time administrative personnel are employed at the Horseheads Readiness Center. Health and Safety programs reviewed during this survey included Spill Prevention, Hazcom, Fire Prevention, Personal Protective Equipment (PPE), Lock-Out/Tag-Out, Confined Spaces, and Respiratory Protection. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial

hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Fifteen (15) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Horseheads Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
HHRC-LW-1	11-26-12	Field Blank	---	< 12 μg
HHRC-LW-2	11-26-12	Drill hall, northeast corner, top of exit sign	0.111	< 110
HHRC-LW-3	11-26-12	Drill hall, north wall, top of AHU #2 switch box	0.111	140
HHRC-LW-4	11-26-12	Drill hall, west wall, top of display case	0.111	170
HHRC-LW-5	11-26-12	Drill hall, east side, on floor	0.111	< 110
HHRC-LW-6	11-26-12	Drill hall, west side, on floor	0.111	< 110
HHRC-LW-7	11-26-12	Kitchen, southwest corner, top of paper towel dispenser	0.111	< 110
HHRC-LW-8	11-26-12	Basement, former indoor firing range, west end, on floor	0.111	120
HHRC-LW-9	11-26-12	Basement, former indoor firing range, center, on light fixture	0.111	180
HHRC-LW-10	11-26-12	Basement, former indoor firing range, east end, on floor	0.111	120
HHRC-LW-11	11-26-12	Fitness room 110B, west wall, top of clock	0.111	< 110
HHRC-LW-12	11-26-12	Men's locker room, southwest corner, on heater fins	0.111	2,800
HHRC-LW-13	11-26-12	Room 106B, on window sill	0.111	< 110
HHRC-LW-14	11-26-12	Break room 134B, center of room, supplied air grill	0.111	220
HHRC-LW-15	11-26-12	Hallway, top of AED case	0.111	< 110
HHRC-LW-16	11-26-12	Maintenance area, along south wall, on work table	0.111	140

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range is currently used as storage. It was stated to Bonus Environmental, LLC that it was remediated "several" years ago. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Horseheads Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified two areas of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling paint in the following areas:

- Approximately 220 ft² of peeling gray paint on the floor of the men's locker room;
- Approximately 80 ft^2 of peeling gray paint in the Drill hall.

One (1) paint chip samples was collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. See table below for sample information:

Army National Guard – Horseheads Readiness Center Paint Chip Sample				
Sample #	*Sample Location*	*Color*	*Analytical Reporting Limit (%)*	*Analytical Results (%)*
HHRC-PC-1	Men's locker room	Gray	0.0085	< 0.0085

Analysis indicated that the peeling paint collected did not contain detectable levels of lead. The paint is therefore not considered to be lead-based paint. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Horseheads Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM's that were considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Horseheads Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC did not identify any water-damaged materials.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Horseheads Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the

housekeeping practices within Horseheads Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Horseheads Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Horseheads Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 391 ppm to 535 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation all indicated 0.0 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Horseheads Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 57.9ºF to 68.0ºF and are not considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Horseheads Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 25.2% to 32.2%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Horseheads Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, east side of building (partly sunny)	391	0.0	47.7	39.7
Office 102	468	0.0	30.2	**66.7**
Basement, former indoor firing range	415	0.0	30.7	**65.5**
Office 106B	535	0.0	27.1	**65.1**
Fitness room 110B	453	0.0	29.5	**66.4**
Boiler room	446	0.0	26.8	68.0
Men's locker room	455	0.0	27.3	**66.9**
Break room 134B	515	0.0	32.2	**65.8**
Kitchen	409	0.0	25.2	**64.8**
Drill hall	409	0.0	27.1	**61.9**
Maintenance area (1 bay door open)	428	0.0	26.0	57.9

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Horseheads Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Horseheads Readiness Center
Lighting Measurements

Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Basement, former indoor firing range (storage)	36.9	30	Yes
Basement, room 2	Inaccessible		
East entrance foyer	26.4	10	Yes
Room 102, Superintendent's office	136.9	50	Yes
Room 105 (office)	82.9	50	Yes
Hallway	45.3	5	Yes
Room 106A (office)	128.2	50	Yes

Army National Guard – Horseheads Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Room 106B (office)	83.8	50	Yes
Room 108 (office)	52.4	50	Yes
Room 107 (storage)	11.3	30	No
Room 109 (janitor's closet)	46.2	30	Yes
Room 110A (office)	66.5	50	Yes
Room 110B (fitness room)	101.9	30	Yes
Room 112 (storage)	42.1	30	Yes
Boiler room	38.8	30	Yes
Men's locker room	14.2	7	Yes
Men's restroom	34.3	5	Yes
Men's showers	74.6	7	Yes
Women's locker room	43.4	7	Yes
Women's restroom	125.1	5	Yes
Women's locker room	61.4	7	Yes
Officer's restroom	127.2	5	Yes
Officer's locker room	119.0	7	Yes
Room 136 (FRG office/storage)	32.2	30	Yes
Room 137 (Supply)	19.4	30	No
Classroom 134A	110.0	30	Yes
Break room 134B	57.3	10	Yes
Kitchen	65.4	50	Yes
Room 131 (kitchen storage)	58.4	30	Yes
Room 129 (storage)	13.3	30	No
Drill hall	21.5	30	No
Maintenance area (storage)	16.2	30	No
Maintenance office 1	19.2	50	No
Maintenance storage 1	69.3	30	Yes
Maintenance office 2	56.5	50	Yes
Maintenance storage 2	Inaccessible		
Room 126 (storage)	Inaccessible		
Room 125 (medical storage)	8.2	30	No
Room 123 (office)	26.2	50	No
Room 137 (Supply vault)	Inaccessible		

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Horseheads Readiness Center located at 128 Colonial Drive in Horseheads, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Jeff Walworth on November 26, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Horseheads Readiness Center were above the OSHA interpretive level of 200 µg/ft² in two of the tested areas;

2. Bonus Environmental, LLC identified two areas of peeling paint which did not contain detectable levels of lead.

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC did not identify any water-damaged or moldy building materials.

5. Bonus Environmental, LLC found the housekeeping practices within Horseheads Readiness Center in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Horseheads Readiness Center. All were found to be within their acceptable ranges/limits; with the exception of several temperature readings.

8. Areas within the Horseheads Readiness Center facility were identified as improperly illuminated.

9. Health and Safety policies reviewed at the Horseheads Readiness Center included Spill Prevention, Hazcom, Fire Prevention, Personal Protective Equipment (PPE), Lock-Out/Tag-Out, Confined Spaces, and Respiratory Protection. All were found to meet regulatory requirements.

10. The Maintenance area is used for storage, with the only maintenance activity being sporadic tire repairs. No vehicle exhaust ventilation system exists within the Maintenance area.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North -

Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

Non-Responsive

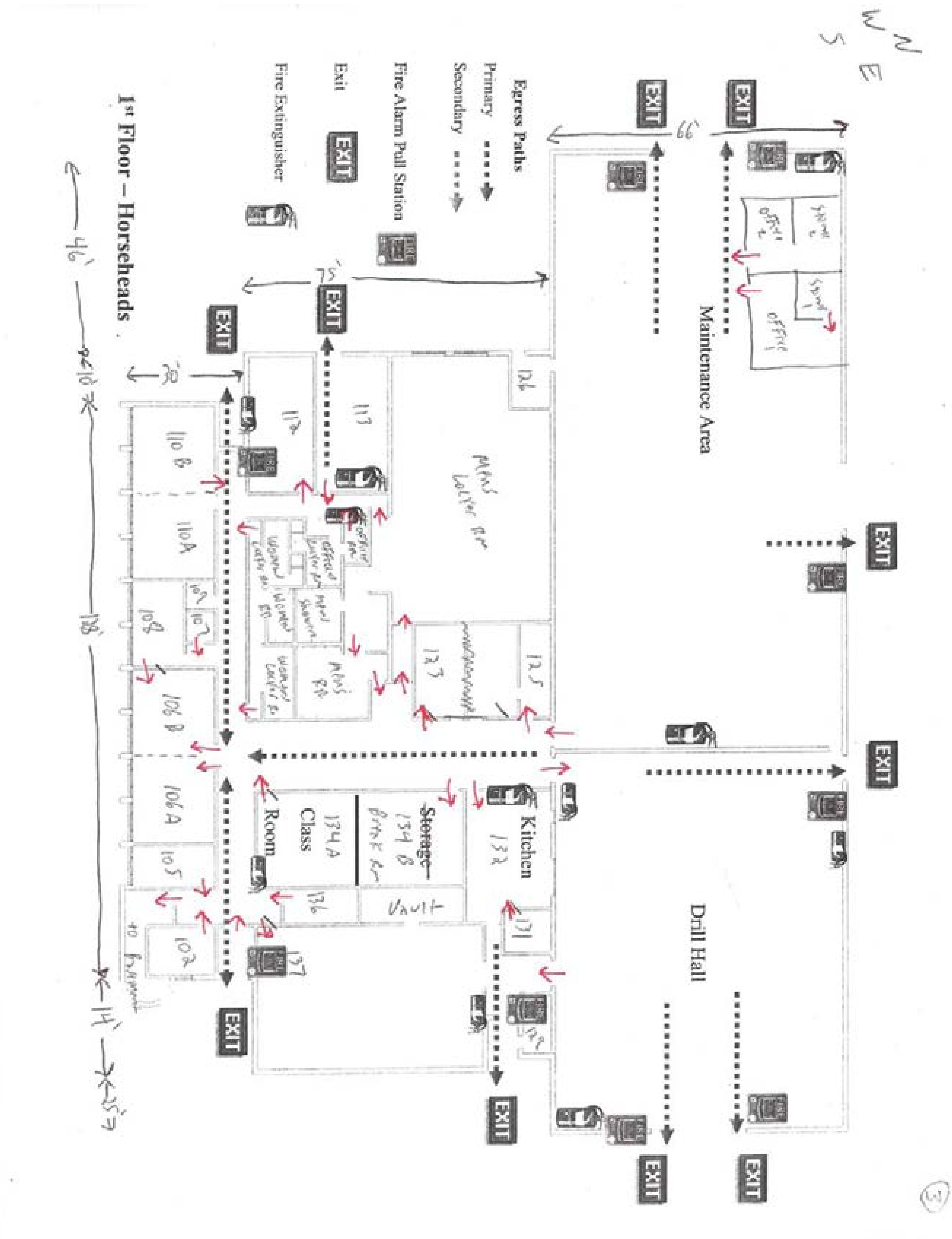
Principal
Bonus Environmental, LLC

BEST AVAILABLE COPY

Appendix A

Shop Diagram and Air Flow Patterns

Basement – Horseheads
107
22'


1st Floor – Horseheads
Egress Paths
Primary
Secondary
Fire Alarm Pull Station
Exit
Fire Extinguisher
EXIT
Maintenance Area
Drill Hall
Kitchen
Storage
Class
Room

Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Horseheads RC	**Chain Of Custody:**	514688
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Horseheads, NY	**Date Submitted:**	12/4/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	12/11/2012 **Report Date:** 12/17/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13020006	HorseheadsRC-PC 1	Flame	Paint Chip	****	N/A	0.0085	%Pb		<0.0085	%Pb	
13020007	HorseheadsRC-LW 1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13020008	HorseheadsRC-LW 2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13020009	HorseheadsRC-LW 3	Flame	Wipe	****	0.111	110	ug/ft²	16	140	ug/ft²	
13020010	HorseheadsRC-LW 4	Flame	Wipe	****	0.111	110	ug/ft²	19	170	ug/ft²	
13020011	HorseheadsRC-LW 5	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13020012	HorseheadsRC-LW 6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13020013	HorseheadsRC-LW 7	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13020014	HorseheadsRC-LW 8	Flame	Wipe	****	0.111	110	ug/ft²	14	120	ug/ft²	
13020015	HorseheadsRC-LW 9	Flame	Wipe	****	0.111	110	ug/ft²	21	180	ug/ft²	
13020016	HorseheadsRC-LW 10	Flame	Wipe	****	0.111	110	ug/ft²	13	120	ug/ft²	
13020017	HorseheadsRC-LW 11	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13020018	HorseheadsRC-LW 12	Flame	Wipe	****	0.111	110	ug/ft²	320	2800	ug/ft²	
13020019	HorseheadsRC-LW 13	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13020020	HorseheadsRC-LW 14	Flame	Wipe	****	0.111	110	ug/ft²	24	220	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Horseheads RC	**Chain Of Custody:**	514688
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-F, State Military Reservation	**Job Location:**	Horseheads, NY	**Date Submitted:**	12/4/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	12/11/2012 **Report Date:** 12/17/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13020021	HorseheadsRC-LW 15	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13020022	HorseheadsRC-LW 16	Flame	Wipe	****	0.111	110	ug/ft^2	16	140	ug/ft^2	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Non-Responsive

Analys

Non-Responsive

Technical Manage

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AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514688

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Horseheads RC
2. Job Location: Horseheads, NY
3. Job #: 1061-15 P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone # Non-Responsive
5. Submitted by: Non-Responsive Signature

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include Non-Responsive with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive bonusenvironmental.com
Comments:	☐ 2 Day Date Due: 5/4/15	☒ Fax: us.army.mil
	☐ Results Required By Noon	☒ Verbal us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 1 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 16 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 5/4/15 @ 1000 Via: Fed Ex By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

Surface Sampling Field Data Sheet

Date Collected: 11-26-12
Job Name: Horseheads RC
Company: Bonus Environmental, LLC
Job Number: 1061-15
Job Location: 128 Colonial DR.
Phone Number: 989-779-7686
Contact Perso: Non-Responsive
Address: Horseheads, NY
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
HHRC-LW-1	Field Blank	—	—	Ghost wipe
-2	Drill Hall	NE corner, top of Exit sign	4"x4"	
-3	Drill Hall, North wall	top of AHU #2 switch box		
-4	Drill Hall, West wall	top of digital call		
-5	Drill Hall, East side	on Floor		
-6	Drill Hall, West side	on Floor		
-7	Kitchen, SW corner	top of Paper towel dispenser		
-8	basement, Former Indoor Firing Range	West end, on floor		
-9	basement, Former Indoor Firing Range	center, on light Fixture		
-10	Basement, former Indoor Firing Range	East end, on Floor		
-11	Fitness Rm 110 B, west wall	top of clock		
-12	Mens Locker Rm, SW corner	on Heater Fins		
-13	Rm 106 B	on window sill		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-26-14
Job Number: 1061-15
Contact Person: Non-Responsive

Job Name: Horseheads RC
Job Location: 128 Colonial DR.
Address: Horseheads, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
HHRC-LW-14	Break room 134 B, center of Rm	Supplied Air grill	4"x4"	Ghost wipe
-15	~~Maintenance Area~~ Hallway	top of AED case	↓	↓
-16	Maintenance Area,	↓	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Photographs

Building exterior, east side

Basement, former indoor firing range

Main hallway

Boiler room

Men's locker room, peeling gray floor paint

Break room

Kitchen

Maintenance area, bulk fluids storage

Maintenance area (storage)

Drill Hall

Appendix D

References

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

U.S. Army Center for Health Promotion and Preventive Medicine

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
ITHACA, ARMORY
ITHACA, NEW YORK
12 SEPTEMBER 2005

Distribution limited to U.S. Government agencies only. Requests for this document must be referred to National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 301-IH Old Bay Lane, [redacted] MD 21[redacted]

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

USCHPPM

Readiness Thru Health

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U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
ITHACA ARMORY
ITHACA, NY
12 SEPTEMBER 2005

1. PURPOSE. To conduct an industrial hygiene survey of the New York Army National Guard (NYARNG) Ithaca Armory, Ithaca, NY, to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve as a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

2. CONCLUSIONS.

a. Lead Exposure. Levels of lead in dust that exceeded safe limits for adults and children were identified. These levels may result in health hazards to adults and to children visiting the Armory. Personnel working in the Armory were tracking dust containing lead to the Hallway and Weight Room exiting the Locker Room, which was a converted Indoor Firing Range. Cleaning areas with elevated levels of lead in dust may prevent lead dust from being redistributed to other areas of the Armory.

b. Safety Hazards. An extension cord in the Weight Room posed a tripping hazard.

3. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Lead Exposure. Health RAC 3 for child exposure. Health RAC 4 for adult exposure. Clean horizontal surfaces in the Locker Room, Weight Room, and Hallways leading out of the Locker Room to the National Guard Bureau Region North Industrial Hygiene Office and US Army Center for Health Promotion and Preventive Medicine recommended maximum level. Follow the guidance in National Guard Pam 420-15 and in Appendix F of the report. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the Hallways leading out of the Locker Room to the Environmental Protection Agency lead in dust standards for young children. Pending cleanup, ensure that personnel are notified of the potential to track lead contamination through adjacent

rooms and transport it home in their clothing. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Safety Hazards. Safety RAC 4. Inspect building for clutter and tripping hazards, and remove them.

NYARNG, IH Survey, Ithaca Armory, Ithaca, NY, Report No. 55-ML-048L-05/07

CONTENTS

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
ITHACA ARMORY
ITHACA, NY
12 SEPTEMBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE OF EVALUATION. To conduct an industrial hygiene survey of the New York Army National Guard (NYARNG) Ithaca Armory, Ithaca, NY, to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve as a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Fax, National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 27 July 2005, subject: SAB.

4. BACKGROUND INFORMATION.

a. Armory Mission and Background Information. The Armory mission was to support the 108th Infantry, 1st Brigade (L1), Company D; the 127th Army Reserves, 1st Brigade, Company D; and the 204th Engineering Brigade, Detachment 1, Company B.

b. Date of Construction. The construction date was 1988.

c. Armory Use by Children. The point of contact (POC) stated that children occupied the Drill Hall area and classrooms occasionally for family support meetings. The New York Military Department is currently advertising Ithaca Armory as available for rental for activities that include young children.

d. POC. The POC was Mr. Non-Responsive Armory Manager, 128 Colonial Drive, Horseheads, NY, Phone: 607-739-7725; or Ithaca, NY, Phone: 607-257-0918.

5. FACILITY EVALUATION.

a. Sampling. Surface dust and air sampling were conducted to determine the existence of lead hazards. Results are shown in the Table in Appendix B.

b. Physical Condition of Facilities.

(1) Paint. The date of construction indicates that lead paint was unlikely to have been used. The painted wall surfaces were in very good condition. No signs of deteriorating paint were observed.

(2) Asbestos. The POC stated that the building did not contain any asbestos-containing building materials (ACBM). The date of construction indicates that the presence of ACBM would be unlikely.

(3) Mold and Moisture Problems. No mold or moisture problems were observed or reported.

(4) Building Physical Condition. The building was in good condition and well maintained in the office areas, classrooms, and Drill Hall. The POC for the facility stated that the walls had been painted within the last five years and that general housekeeping and maintenance were performed routinely. The former Indoor Firing Range (IFR), now a Locker Room, and an adjoining Locker Room, Weight Room and Shower Room, used only by the Soldiers, showed less attention to housekeeping and maintenance. These areas were dusty and the former IFR was cluttered with scaffolding, building material and office equipment as well as lockers used by the Soldiers.

(5) IFR. The IFR had been closed for approximately 13 years at the time of the site visit. The range had been decontaminated in 2001 by a lead abatement contractor hired through the State of New York. The contractor removed the bullet trap and firing line equipment and reportedly conducted a final clearance assessment. The IFR was converted to a Locker Room in 2002. State records on the lead abatement project were maintained at the Latham Headquarters Office.

c. Safety and Occupational Health Programs. Hazard awareness training programs covered occupational health topics that included lead and asbestos hazards, noise, personal protective equipment, material safety data sheets, the Occupational Safety and Health Administration (OSHA) right-to-know standard, lockout and tag out, and other topics required in the training for State employees. Employee training records were up to date and located onsite.

d. Heating, Ventilation, and Air Conditioning Systems. The building was heated by a hot-water boiler serving the office and classroom areas. The building was cooled by window air-conditioning units located in various office spaces in the building. The Drill Hall was heated by ceiling-mounted forced air heaters and the Locker Room by ceiling-mounted radiant heaters.

e. Noise Dosimeter. There appeared to be no operations within the facility that would generate noise levels above the occupational exposure levels.

f. Lighting. There were no complaints about inadequate lighting. Levels in the offices of Companies C and E were 83 and 74 foot candles respectively. These values fall well within the Illumination Engineering Society of North America recommended range for medium visual tasks such as office work and reading.

g Other Building Concerns. An extension cord in the Weight Room posed a tripping hazard.

6. ASSESSMENT CRITERIA FOR LEAD. See Appendix C.

a. Lead in Air. The Army complies with the OSHA 8-hour time-weighted average Permissible Exposure Limit of 50 micrograms of lead per cubic meter (µg/m³) of air.

b. Lead in Dust. The Environmental Protection Agency (EPA) and State of New York limits for lead in dust are 40 micrograms per square foot (µg/ft^2) on floors, 250 µg/ft^2 on windowsills, and 400 µg/ft^2 in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The National Guard Bureau (NGB) Region North Industrial Hygiene Office concurs with the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level of 200 µg/ft^2 on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA/State standards. This level was adopted from OSHA Compliance Letter 02-02-58.

c. Lead in Paint. Because of the building's age, it was unlikely that lead-based paint was used during construction and maintenance.

7. SAMPLING RESULTS, DISCUSSION, AND CONCLUSIONS

a. Lead in Dust. Sample locations and analytical results are shown in the Table below. Sample results greater than 40 µg/ft² for floors or 200 µg/ft² for other surfaces are highlighted. Nine results exceeded the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level for lead in dust. The highest readings were found on top of the lighting and heating fixtures inside the Locker Room (former IFR) and the range exhaust ventilation grill. There were very high levels of lead on the floor at both doorways exiting the Locker Room, and in the Hallway and Weight Room area outside the Locker Room. Personnel

occupying or working in these rooms were potentially exposed to lead, and were tracking lead out of the Locker Room and redistributing it into adjacent rooms in the Armory. Five of the floor results exceeded the EPA and the State of New York lead exposure standard for children.

TABLE. Lead in Surface Dust Locations and Analytical Results.

Wipe Sample Number	Location of Samples	Result (µg/ft²)
ITW01	Drill Hall floor, Location 1	7.4
ITW02	Drill Hall floor, Location 1	9.9
ITW03	Drill Hall floor, Location 3	4.9
ITW04	Drill Hall floor, Location 4	12
ITW05	Drill Hall floor, Location 5	13
ITW07	Locker Room (Converted IFR), top of heaters	2,000
ITW08	Locker Room floor at door to hallway	2,200
ITW09	Locker Room, top of cabinet	230
ITW10	Locker Room floor inside entrance from hallway	3,800
ITW11	Locker Room exhaust air duct	150,000
ITW13	Locker Room, top of light fixture	4,200
ITW14	Locker Room floor at door to Weight Room	19,000
ITW15	Weight Room floor at door to Locker Room	3,200
ITW16	Hallway floor outside Locker Room	1,600
ITW17	Storage Room floor next to Locker Room	Sample lost

Note: Samples ITW06, -12, and -18 were field blanks.

b. Lead in Air. General area sampling was conducted in the Locker Room and in the Drill Hall. The air sample results were less than 4 µg/m³, and were below the laboratory analytical reporting limit for lead in air of 1 µg/sample, as well as the OSHA standard of 50 µg/m³ for lead in air over an 8-hour day.

8. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Lead Exposure. Health RAC 3 for child exposure. Health RAC 4 for adult exposure. Clean horizontal surfaces in the Locker Room, Weight Room, and Hallways leading out of the Locker Room to the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level. Follow the guidance in NG Pamphlet 420-15 and in Appendix F.

recommended maximum level. Follow the guidance in NG Pamphlet 420-15 and in Appendix F. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the Hallways leading out of the Locker Room to the EPA lead in dust standards for young children. Pending cleanup, ensure that personnel are notified of the potential to track lead contamination through adjacent rooms and transport it home in their clothing. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Other Building Concerns. Safety RAC 4. Inspect building for clutter and tripping hazards, and remove them.

9. PHOTOGRAPHS AND FLOOR PLAN. See Appendices D and E respectively.

10. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report; please contact the undersigned at DSN 584-3118, commercial 410-436-3118, or by electronic mail: Non-Responsive @us.army.mil

Non-Responsive

Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive

Program Manager
Industrial Hygiene Field Services Program

APPENDIX A

References:

1. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910, current ed. 1910.1025 (Lead). http://www.osha.gov/comp-links.html

2. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910 for General Industry and current ed. 1910.1200 (Hazard Communication). http://www.osha.gov/comp-links.html

3. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62.1-2004, Ventilation for Acceptable Indoor Air Quality. http://www.ashrae.org

4 DA PAM 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://www.usapaarmy.mil/pdffiles/p40-501.pdf

5. Illuminating Engineering Society of North America, ANSI/IESNA RP-1-2004, Office Lighting, American National Standards Institute.

6. Environmental Protection Agency, Title 40 CFR Part 745, Lead; Identification of Dangerous Levels of Lead; Final Rule, 5 Jan 2001.

7. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, 19 August 1998. http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

8. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000. http://www.usapa.army.mil/pdffiles/p4C_503.pdf

9. Environmental Protection Agency, Title 40 CFR, Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart M-National Emission Standard for Asbestos.

10. OSHA Directive CPL 02-02-58, Lead Exposure in Construction; Interim Final Rule – Inspection and Compliance Procedures, December 13, 1993.

11. NG Pam 420-15, Facilities Engineering, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

APPENDIX B

LABORATORY REPORTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLA 101143-0
NY EL 10920
AIHA 100470

Client:	National Guard Bureau	**Job Name:**	State Amary	**Chain Of Custody:**	143824
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Ithaca, NY	**Date Submitted:**	9/21/2005
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	Not Provided	**Date Analyzed:**	9/27/2005
Attention:	Non-Responsive				**Report Date:** 27-Sep-05

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0566930	IT-W 01	Furnace	Wipe	****	0.111	2.70	ug/ft²	7.4	ug/ft²	
0566931	IT-W 02	Furnace	Wipe	****	0.111	2.70	ug/ft²	9.9	ug/ft²	
0566932	IT-W 03	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.9	ug/ft²	
0566933	IT-W 04	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0566934	IT-W 05	Furnace	Wipe	****	0.111	2.70	ug/ft²	13	ug/ft²	
0566935	IT-W 06	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0566936	IT-W 07	Flame	Wipe	****	0.111	108.01	ug/ft²	2000	ug/ft²	
0566937	IT-W 08	Flame	Wipe	****	0.111	108.01	ug/ft²	2200	ug/ft²	
0566938	IT-W 09	Furnace	Wipe	****	0.111	67.51	ug/ft²	230	ug/ft²	
0566939	IT-W 10	Flame	Wipe	****	0.111	108.01	ug/ft²	3800	ug/ft²	
0566940	IT-W 11	Flame	Wipe	****	0.111	108.01	ug/ft²	150000	ug/ft²	
0566941	IT-W 12	Furnace	Wipe	****	0.111	2.70	ug/ft²	3.6	ug/ft²	
0566942	IT-W 13	Flame	Wipe	****	0.111	108.01	ug/ft²	4200	ug/ft²	
0566943	IT-W 14	Flame	Wipe	****	0.111	108.01	ug/ft²	19000	ug/ft²	
0566944	IT-W 15	Flame	Wipe	****	0.111	108.01	ug/ft²	3200	ug/ft²	
0566945	IT-W 16	Flame	Wipe	****	0.111	108.01	ug/ft²	1600	ug/ft²	
0566947	IT-W 18	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.4	ug/ft²	
0566948	IT- A 01	Flame	Air	945	N/A	3.17	ug/m³	< 3.2	ug/m³	
0566949	IT- A 02	Flame	Air	900	N/A	3.33	ug/m³	< 3.3	ug/m³	
0566950	IT- A 03	Flame	Air	839	N/A	3.58	ug/m³	< 3.6	ug/m³	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0
NY ELAP 10920
AIHA 100470

Client:	National Guard Bureau	**Job Name:**	State Amary	**Chain Of Custody:**	143824		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Ithaca, NY	**Date Submitted:**	9/21/2005		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	9/27/2005	**Report Date:**	27-Sep-05

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result			Comments
0566951	IT- A 04	Flame	Air	897	N/A	3.34	ug/m³	<	3.3	ug/m³	
0566952	IT- A 05	Flame	Air Blank	0	N/A	3.00	ug/m³	<	3	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Anal Non-Responsive

Technical Manager: Non-Responsive

APPENDIX C

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If Soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. General area air samples collected in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

APPENDIX D

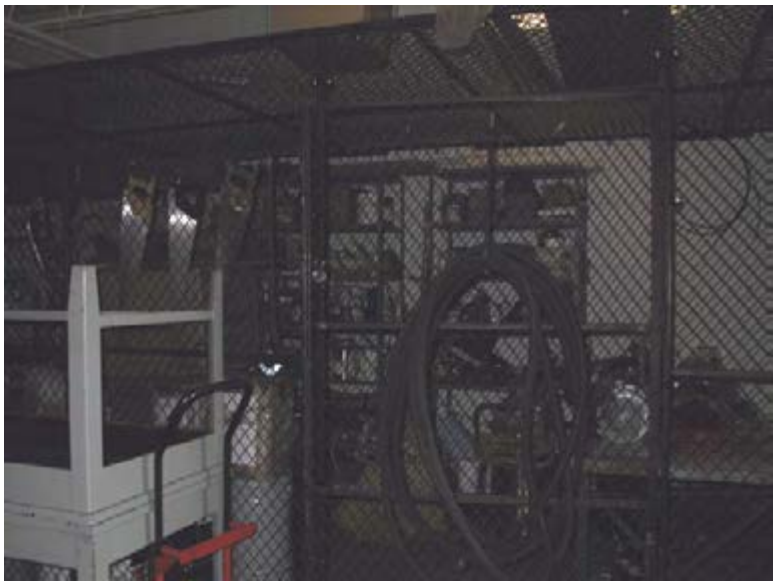
PHOTOGRAPHS

Main entrance. The building was constructed of cement block with a brick exterior.

Drill Hall.

Main office areas of the Armory and the main entrance.

Drill Hall. The Hall was occasionally used for storage of vehicles during inclement weather.



Maintenance Storage Room of the Drill Hall. This room contained paints, oils, lubricants, and grounds maintenance equipment.

Kitchen.

Equipment stored in the converted IFR.
The range's lighting and heating fixtures had remained.

View of cabinets, lockers and scaffolding placed inside the old IFR.
The Companies used the lockers during 2-week training periods at the facility.

ITW01. Northeast corner of Drill Hall near hallway to converted IFR and Men's Locker Room.

ITW02. Drill Hall in front of the Maintenance Storage Room.

ITW03. West door of Drill Hall at hallway to the IFR.

ITW04. East wall of Drill Hall beside door to Company C Storage and Arms Vault.

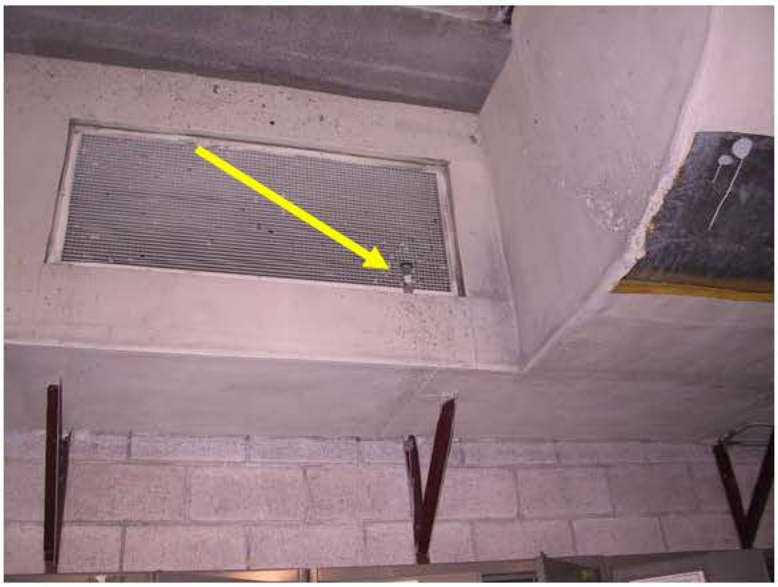
ITW05. Southwest corner of Drill Hall.

ITW07. Indoor Firing Range (IFR) showing heaters and light fixtures sampled.

ITW08. Inside the IFR at entrance.

ITW09. IFR on top of lockers.

ITW10. Hallway at entrance to Locker Room.

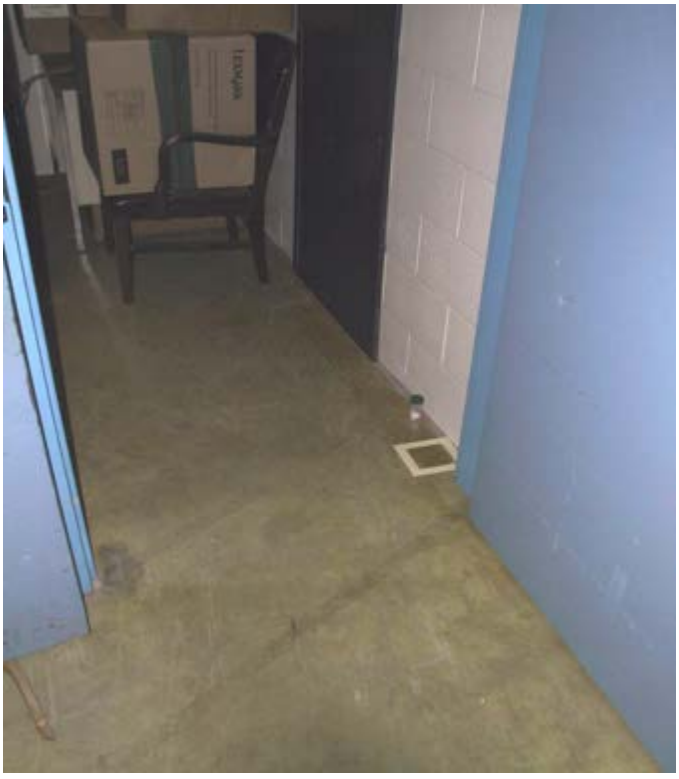


ITW11. Exhaust vents in converted IFR above the bullet trap.

ITW13. Top of lighting fixtures close to bullet trap area.

ITW-14. Doorway between IFR and Weight Room.

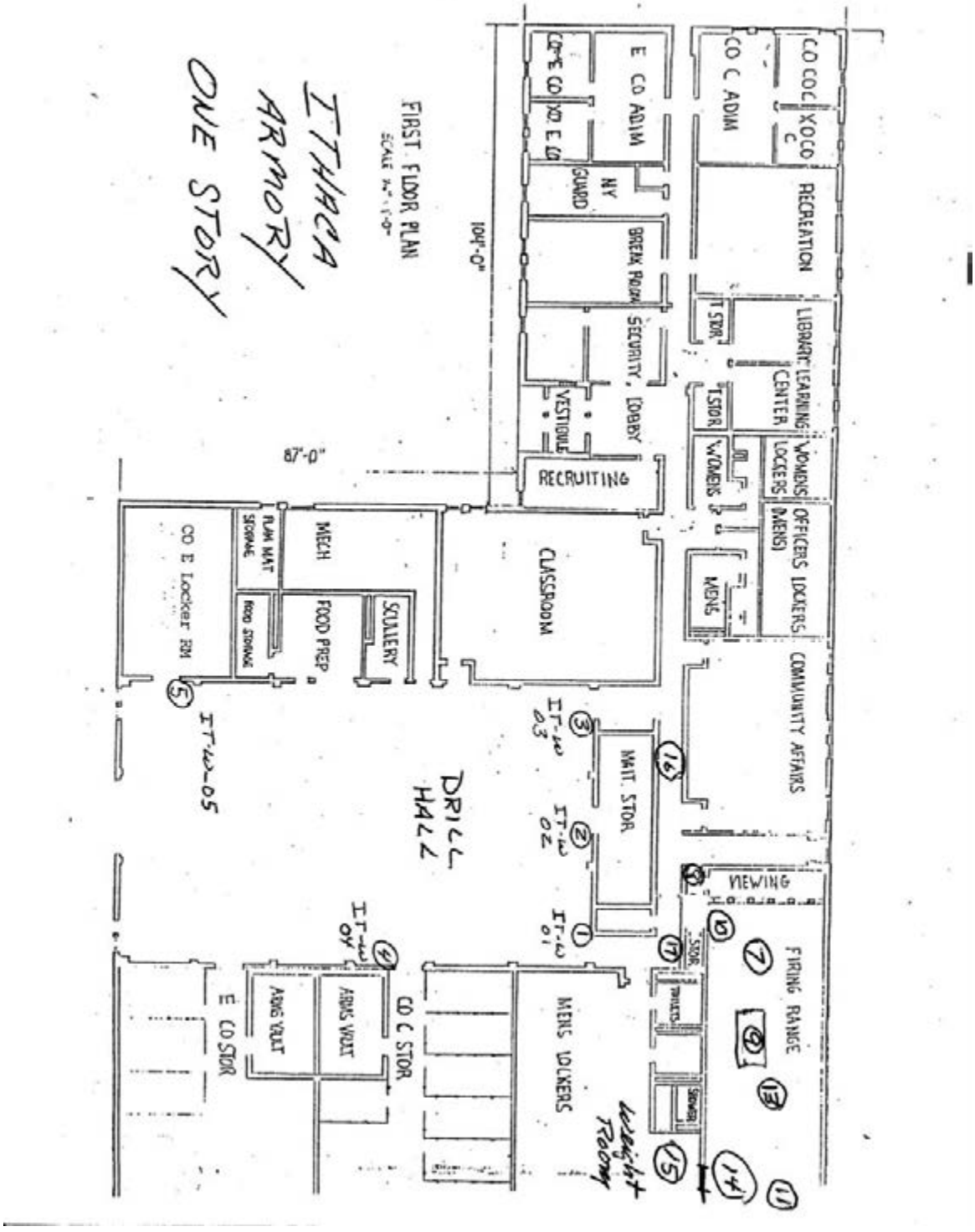
ITW15. Weight Room at door to IFR. Note tripping hazard.



ITW16. Hallway leading into the IFR.

ITW17. Storage Room next to IFR.

APPENDIX E
Floor Plan of the Ithaca Armory, Ithaca, NY



APPENDIX F

LEAD CLEANING GUIDANCE

CHAPTER 14: CLEANING

Cleaning: How To Do It

1. Include step-by-step procedures for precleaning, cleaning during the job, and daily and final cleanings in project design or specifications.
2. Assign responsibilities to specific workers for cleaning and for maintaining cleaning equipment.
3. Have sufficient cleaning equipment and supplies *before* beginning work.
4. If contamination is extensive, conduct precleaning of the dwelling unit. Move or cover all furniture and other objects.
5. Conduct ongoing cleaning during the job, including regular removal of large and small debris and dust. Decontamination of all tools, equipment, and worker protection gear is required before it leaves containment areas. Electrical equipment should be wiped and high-efficiency particulate air (HEPA) vacuumed, not wetted down, to minimize electrocution hazards.
6. Schedule sufficient time (usually 30 minutes to an hour) for a complete daily cleaning, starting at the same time near the end of each workday after lead hazard control activity has ceased.
7. For final cleaning, wait at least 1 hour after active lead hazard control activity has ceased to let dust particles settle.
8. Use a vacuum cleaner equipped with a HEPA exhaust filter. HEPA vacuum all surfaces in the room (ceilings, walls, trim, and floors). Start with the ceiling and work down, moving toward the entry door. Completely clean each room before moving on.
9. Wash all surfaces with a lead-specific detergent, high-phosphate detergent, or other suitable cleaning agent to dislodge any ground-in contamination, then rinse. Change the cleaning solution after every room is cleaned.
10. Repeat step 8. To meet clearance standards consistently, a HEPA vacuum, wet wash, and HEPA vacuum cycle is recommended. For interim control projects involving dust removal only, the final HEPA vacuuming step is usually not needed (see Chapter 11). Other cleaning methods are acceptable, as long as clearance criteria are met and workers are not overexposed.
11. After final cleaning, perform a visual examination to ensure that all surfaces requiring lead hazard control have been addressed and all visible dust and debris have been removed. Record findings and correct any incomplete work. This visual examination should be performed by the owner or an owner's representative who is independent of the lead hazard control contractor.
12. If other construction work will disturb the lead-based paint surfaces, it should be completed at this point. If those surfaces are disturbed, repeat the final cleaning step after the other construction work has been completed.
13. Paint or otherwise seal treated surfaces and interior floors.
14. Conduct a clearance examination (see Chapter 15).
15. If clearance is not achieved, repeat the final cleaning.

16. Continue clearance testing and repeated cleaning until the dwelling achieves compliance with all clearance standards. As an incentive to conduct ongoing cleaning and a thorough final cleaning, the cost of repeated cleaning after failing to achieve clearance should be borne by the contractor as a matter of the job specification, not the owner.
17. Do not allow residents to enter the work area until cleaning is completed and clearance is established.
18. Cleaning equipment list:
    - HEPA vacuums.
    - Detergent.
    - Waterproof gloves.
    - Rags.
    - Sponges.
    - Mops.
    - Buckets.
    - HEPA vacuum attachments (crevice tools, beater bar for cleaning rugs).
    - 6-mil plastic bags.
    - Debris containers.
    - Waste water containers.
    - Shovels.
    - Rakes.
    - Water-misting sprayers.
    - 6-mil polyethylene sheeting (or equivalent).

Chapter 14: Cleaning

I. Introduction

This chapter describes cleaning procedures to be employed following abatement and interim control work. Dust removal as an interim control measure is covered in Chapter 11.

All lead hazard control activities can produce dangerous quantities of leaded dust. Unless this dust is properly removed, a dwelling unit will be more hazardous after the work is completed than it was originally. Once deposited, leaded dust is difficult to clean effectively. Whenever possible, ongoing and daily cleaning of leaded dust during lead hazard control projects is recommended. Ongoing and daily cleaning is also necessary to minimize worker exposures.

Cleaning is the process of removing visible debris *and* dust particles too small to be seen by the naked eye. Removal of lead-based paint hazards in a dwelling unit will not make the unit safe unless excessive levels of leaded dust are also removed. This is true regardless of whether the dust was present before or generated by the lead hazard control process itself. Improper cleaning can increase the cost of a project considerably because additional cleaning and clearance sampling will be necessary. However, cleaning and clearance can be achieved routinely if care and diligence are exercised.

A. Performance Standard

Although the cleaning methods described in this chapter are feasible and have been shown to be effective in meeting clearance standards, other methods may also be used if they are safe and effective. This performance-oriented approach should stimulate innovation, reduce cost, and ensure safe conditions for both residents and workers.

B. Small Dust Particles

Dust particles that are invisible to the naked eye remain on surfaces after ordinary cleaning procedures. A visibly clean surface may contain high and unacceptable levels of dust particles and require special cleaning procedures.

C. Difficulties in Cleaning

While cleaning is an integral and essential component of any lead hazard control activity, it is also the most likely part of the activity to fail.

Several common reasons for this failure include low clearance standards, worker inexperience, high dust-producing methods, and deadlines.

1. Low Clearance Standards

Because very small particles of leaded dust are easily absorbed by the body when ingested or inhaled, a small amount can create a health hazard for young children. Therefore, "clearance standards" are extremely low for acceptable levels of leaded dust particles on surfaces after hazard control activities, and careful cleaning procedures are required. Although it is not possible to remove *all* leaded dust from a dwelling, it is possible to reduce it to a safe level.

Clearance standards are described more fully in Chapter 15. The permissible amount of leaded dust remaining on each of the following surfaces following lead hazard work is as follows:

- 100 µg/ft^2 on floors.
- 500 µg/ft^2 on interior window sills (stools).
- 800 µg/ft^2 on window troughs (the area where the sash sits when closed).
- 800 µg/ft^2 on exterior concrete.

These levels are based on wipe sampling. Clearance testing determines whether the premises or area are clean enough to be reoccupied after the completion of a lead paint hazard control project. A cleaned area may not be reoccupied until compliance with clearance standards has been established. To prevent delays, final testing and final cleaning activities should be coordinated.

2. Worker Inexperience

To understand the level of cleanliness required to meet the established clearance standards for hazard control cleanup, new hazard control personnel often require a significant reorientation to cleaning. Many construction workers are used to cleaning up only dust that they can see, not the invisible dust particles that are also important to remove.

3. High Dust-Producing Methods and/or Inadequate Containment

High dust-generating methods, inadequate containment during hazard control work, and poor work practices can all make achievement of clearance particularly difficult. Work practices necessary to prevent spreading of dust throughout a dwelling (e.g., by tracking dust out of work areas) are essential but sometimes tedious. Essential work practices are sometimes mistakenly considered to be "flexible guidelines" rather than necessary standards that are designed to ensure that the job is completed, not only safely, but also on time and within budget.

4. Deadlines

Daily and final cleanings have sometimes been compromised due to project deadlines, since cleaning comes at the end of the job. Hurried efforts often result in clearance failure. Delayed and over-budget hazard control projects are often the result of repeated, unplanned recleanings that are necessitated by inadequate containment and sloppy work practices.

II. Coordination of Cleaning Activities

A. Checklist

The owner or contractor may use the following cleaning checklist before any lead hazard control activity:

- ✓ Is the critical importance of cleaning in a hazard control project understood?
- ✓ Have all workers been trained and certified for hazard control work?
- ✓ Have the precleaning, daily, and final cleanings been scheduled properly and coordinated with the other participants in the hazard control process?
- ✓ Have cleaning equipment and materials been obtained?
- ✓ Do the workers know how to operate and maintain special cleaning equipment, and do they have directions for the proper use of all cleaning materials?
- ✓ Have all workers carefully studied the step-by-step procedures for precleaning (if needed), in-progress cleaning, and daily and final cleanings?
- ✓ Are all workers properly protected during the cleaning processes (see Chapter9)?
- ✓ Have provisions been made to properly contain and store potentially hazardous debris (see Chapter 10)?
- ✓ Have dust-clearance testing and related visual inspections been arranged (see Chapter 15)?
- ✓ Are the clearance criteria to be met fully understood?
- ✓ Have all appropriate surfaces been properly painted or otherwise sealed?
- ✓ Have appropriate records been maintained that document participants' roles in the hazard control project?

B. Equipment Needed for Cleaning

The following equipment is needed to conduct cleaning: high-efficiency particulate air (HEPA) vacuums and attachments (crevice tools, beater bar for cleaning rugs), detergent, waterproof gloves, rags, sponges, mops, buckets, 6-mil plastic bags, debris containers, waste water containers, shovels, rakes, water-misting sprayers, and 6-mil polyethylene plastic sheeting (or equivalent).

C. Waste Disposal

Regulations governing hazardous and nonhazardous waste storage, transportation, and disposal affect both the daily and final cleaning procedures. The hazard control contractor and the disposal contractor should work together to establish formal written procedures, specifying selected containers, storage areas, and debris pickups, to ensure that all relevant regulations are met.

III. Cleaning Methods and Procedures

Many of the special cleaning methods and procedures detailed in this chapter are not standard operating procedure for general home improvement contractors. Therefore, project designers, responsible agencies, or owners must ensure that contractors follow the methods and procedures recommended herein or specially designed alternative procedures, even though some may appear to be redundant and unnecessary. These methods have been shown to be feasible and effective in many situations and skipping steps in the cleaning procedures can be counterproductive.

A. Containment

Because of the difficulty involved in the removal of fine dust, dust generated by hazard control work should be contained to the extent possible to the inside of work areas. Inadequately constructed or maintained containment or poor work practices will result in additional cleaning efforts, due to dust that has leaked out or been tracked out of the work area (see Chapter 8).

B. Basic Cleaning Methods: Wet Wash and Vacuum Cleaning Techniques

Because leaded dust adheres tenaciously, especially to such rough or porous materials as weathered or worn wood surfaces and masonry surfaces (particularly concrete), workers should be trained in cleaning methods. As a motivator, some contractors have awarded bonuses to workers who pass clearance the first time.

Two basic cleaning methods have proven effective, when used concurrently, in lead-based paint hazard control projects: a special vacuum cleaner equipped with a HEPA exhaust filter, followed by wet washing with special cleaning agents and rinsing, followed by a final pass with the HEPA vacuum.

Although HEPA filtered vacuums and trisodium phosphate (TSP) cleaners have been considered the standard cleaning tools for lead hazard control projects, new research, discussed under the "Alternatives Methods" section in this chapter, suggests that other tools and products may also be effective in efficiently cleaning dust while providing adequate worker protection from airborne exposure risks. Some of these innovations may even be superior.

1. HEPA Vacuuming

HEPA vacuums differ from conventional vacuums in that they contain high-efficiency filters that are capable of trapping extremely small, micron-sized particles. These filters can remove particles of 0.3 microns or greater from air at 99.97 percent efficiency or greater. (A micron is 1 millionth of a meter, or about 0.00004 inches.) Some vacuums are equipped with an ultra-low penetration air (ULPA) filter that is capable of filtering out particles of 0.13 microns or greater at 99.9995 percent efficiency. However, these ULPA filters are slightly more expensive, and may be less available than HEPA filters.

Vacuuming with conventional vacuum machines is unlikely to be effective, because much of the fine dust will be exhausted back into the environment where it can settle on surfaces. A recent Canadian study revealed that fine-dust air levels were exceedingly high when a standard portable vacuum with a new bag was used, although partially filled bags were found to be more efficient (CMHC, 1992). Considerations for the proper use of a HEPA vacuum are listed below.

Operating Instructions

There are a numerous manufacturers of HEPA vacuums. Although all HEPA vacuums operate on the same general principle, they may vary considerably with respect to specific procedures, such as how to change the filters. To ensure the proper use of equipment, the manufacturer's operating instructions should be carefully followed and if possible, training sessions arranged with the manufacturer's representative.

Although HEPA vacuums have the same "suction" capacity as ordinary vacuums that are comparably sized, their filters are more efficient. Improper cleaning or changing of HEPA filters may reduce the vacuum's suction capability.

Special Attachments

Because the HEPA vacuum will be used to vacuum surfaces other than floors, operators should buy attachments and appropriate tool kits for use on different surfaces—such as brushes of various sizes, crevice tools, and angular tools.

Selecting Appropriate Size(s)

HEPA vacuums are available in numerous sizes, ranging from a small lunchbucket-sized unit to track-mounted systems. Two criteria for size selection are the size of the job and the type of electrical power available. Manufacturer recommendations should be followed.

Wet-Dry HEPA Vacuums

Some hazard control contractors have found the wet-dry HEPA vacuums to be particularly effective in meeting clearance standards. These vacuums are equipped with a special shut-off float switch to protect the electrical motor from water contact.

Prefilters

HEPA filters are usually used in conjunction with a prefilter or series of prefilters that trap the bulk of the dust in the exhaust airstream, particularly the larger particles. The HEPA filter traps most of the remaining small particles that have passed through the prefilter(s). All filters must be maintained and replaced or cleaned as specified in the manufacturer's instructions. Failure to do so may cause a reduction in suction power (thus reducing the vacuum's efficiency and effectiveness). Failure to change prefilters may damage the vacuum motor and will also shorten the service life of the HEPA filter, which is far more expensive than the prefilters.

HEPA Vacuuming Procedures

Surfaces frequently vacuumed include ceilings, walls, floors, windows, interior and exterior sills, doors, heating, ventilation, and air conditioning (HVAC) equipment (heating diffusers, radiators, pipes, vents), fixtures of any kind (light, bathroom, kitchen), built-in cabinets, and appliances.

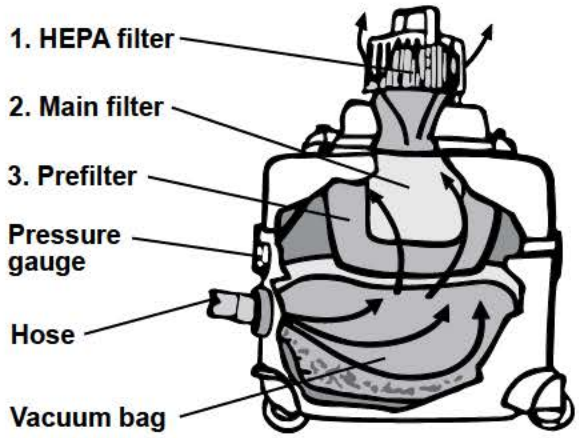
To aid in dislodging and collecting deep dust and lead from carpets, the HEPA vacuum must be equipped with a beater bar (agitator head) that is fixed to the cleaning head. This bar should be used on all passes on the carpet face during dry vacuuming (see Chapter 11 for details on carpet and furniture cleaning).

All rooms and surfaces should be included in the HEPA vacuum process, except for those that (1) were found not to have lead-paint hazards *and* were properly separated from work areas before the process began (see Chapter 8), or (2) were never entered during the process. Porches, sidewalks, driveways, and other exterior surfaces should be vacuumed if exterior hazard control work was conducted, or if debris was stored or dropped outside. Vacuuming should begin on the ceilings and end on the floors, sequenced to avoid passing through rooms already cleaned, with the dwellings' entryway cleaned last.

Emptying the HEPA Vacuum

Used filters and vacuumed debris are potentially hazardous waste and should be treated accordingly (see Chapter10). Therefore, operators should use extreme caution when opening the HEPA vacuum for filter replacement or debris removal to avoid accidental release of accumulated dust into the environment. This may occur, for example, if the vacuum's seal has been broken and the vacuum's bag is disturbed.

Figure 14.1a Vacuum With a HEPA Filter.



Parts of a HEPA-vacuum

Most HEPA-vacuums have three filters: HEPA filter, main filter, and prefilter. Debris gets sucked in through the hose into the vacuum bag. The air and dust get filtered through the prefilter, the main filter, and the HEPA filter. The HEPA filter captures the lead dust before the air is released into the work area again.

Operators should also wear a full set of protective clothing and equipment, including appropriate respirators, when performing this maintenance function, which should be done in the containment area or offsite.

2. Wet Detergent Wash

Several types of detergents have been used to remove leaded dust. Those with a high-phosphate content (containing at least 5 percent trisodium phosphate, also known as TSP) have been found to be effective when used as part of the final cleaning process (Milar, 1982). TSP detergents are thought to work by coating the surface of dusts with phosphate or polyphosphate groups which reduces electrostatic interactions with other surfaces and thereby permits easier removal. Because of environmental concerns some States have restricted the use of TSP, and some manufacturers have eliminated phosphates from their household detergents. However, high-TSP detergents can usually be found in hardware stores and may be permitted for limited use, such as lead hazard control.

Other non-TSP cleaning agents developed specifically for removing leaded dust have also been found to be effective (possibly more effective than TSP) in limited trials by several

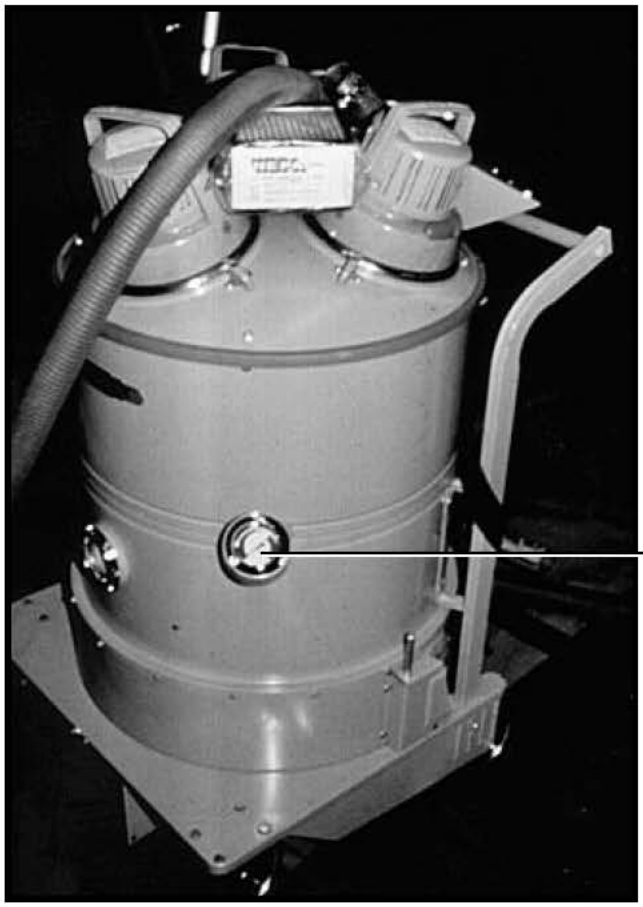
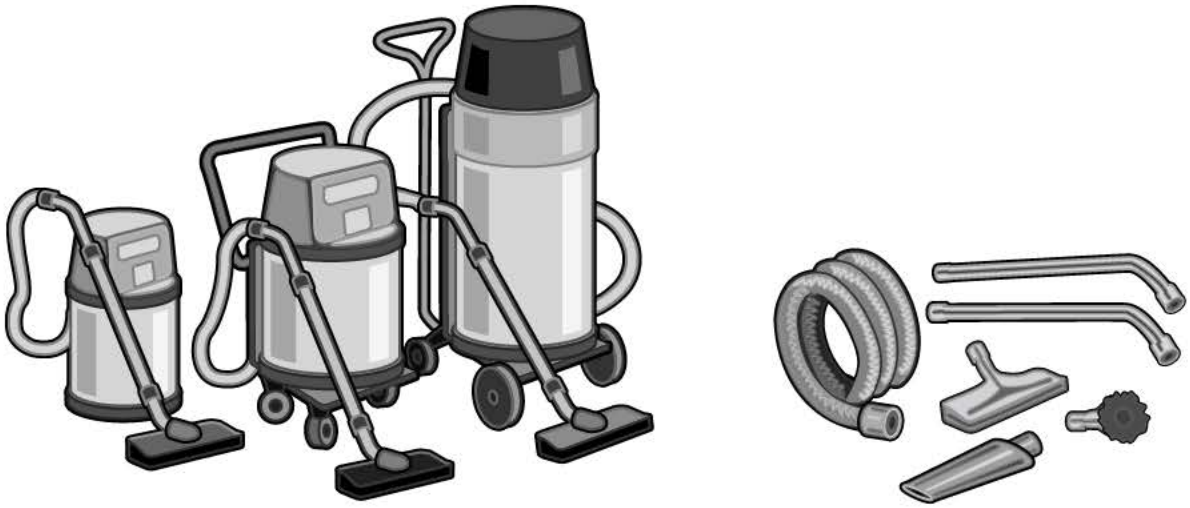


Figure 14.1b Pressure Gauge Indicator Shows When Filters Require Changing.

Figure 14.2 HEPA Vacuum Sizes and Tools.



investigators (Grawe, 1993; Wilson, 1993) and may also be safer, since TSP is a skin and eye irritant. See section VII for more information on non-TSP detergents. Proper procedures for using high-phosphate detergents also apply to most other types of detergents and include the following steps:

Manufacturer's Dilution Instructions

Users of cleaning agents for leaded dust removal should follow manufacturer's instructions for the proper use of a product, especially the recommended dilution ratio. Even diluted, trisodium phosphate is a skin irritant and users should wear waterproof gloves. Eye protection should also be worn, and portable eyewash facilities should be located in or very near the work area. Consult manufacturer's directions for the use of other detergents.

Appropriate Cleaning Equipment

Because a detergent may be used to clean leaded dust from a variety of surfaces, several types of application equipment are needed, including cleaning solution spray bottles, wringer buckets, mops, variously sized hand sponges, brushes, and rags. Using the proper equipment on each surface is essential to the quality of the wet-wash process.

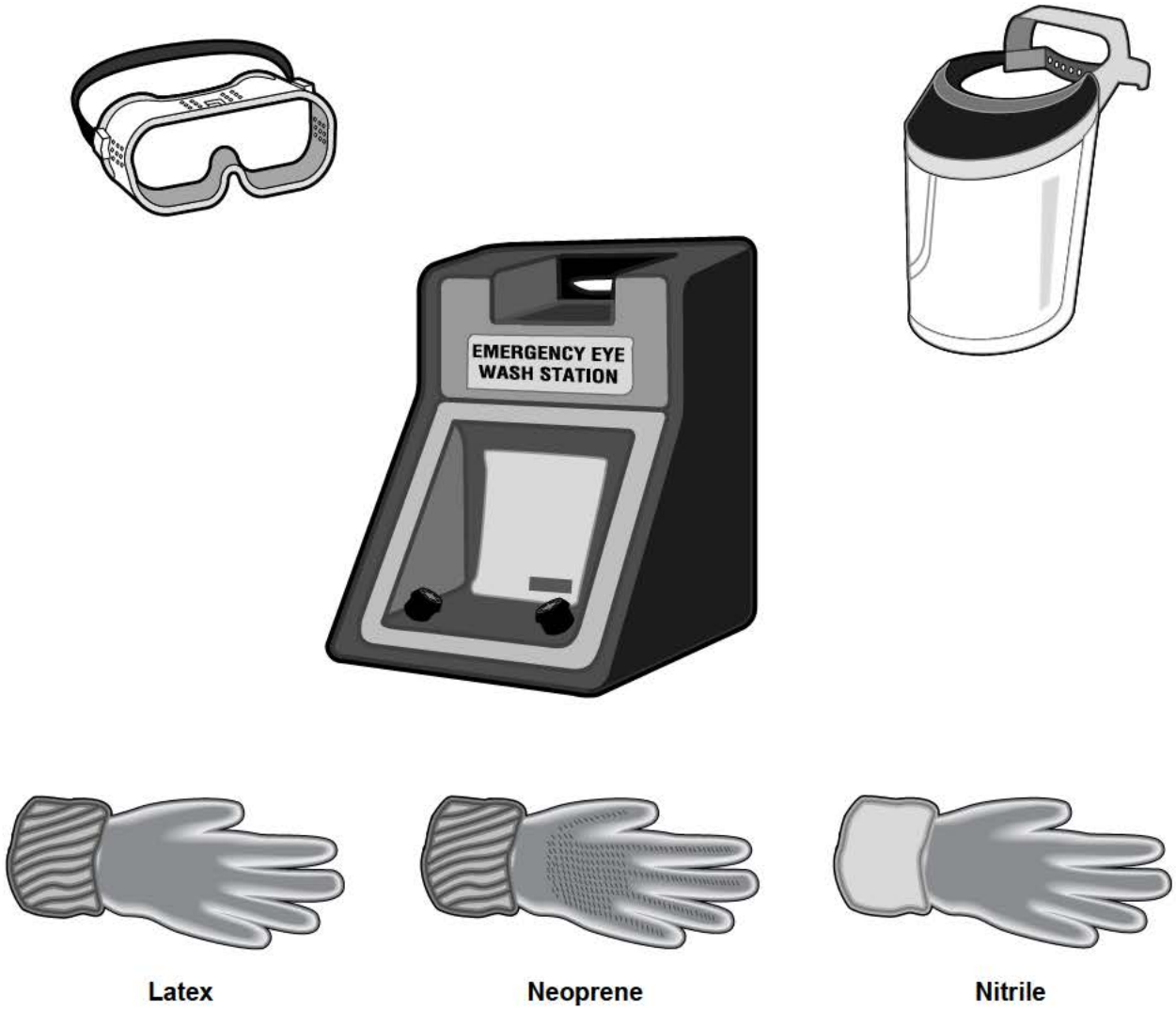
Proper Wet-Cleaning Procedures

At the conclusion of the active lead hazard control process and the initial HEPA vacuuming, all vacuumed surfaces should be thoroughly and completely washed with a high-phosphate solution or other lead-specific cleaning agent (or equivalent) and rinsed. Select a detergent that does not damage existing surface finishes (TSP may damage some finishes). Work should proceed from ceilings to floors and sequenced to avoid passing through rooms already cleaned.

Changing Cleaning Mixture

Many manufacturers of cleaners will indicate the surface area that their cleaning mixture will cover. To avoid recontaminating an area by cleaning it with dirty water, users should follow manufacturer-specified surface-area limits. However, regardless of manufacturers' recommendations, the cleaning mixture should be changed after its use for each room. As a rule of thumb, 5 gallons should be used to clean no

Figure 14.3 Goggles, Face Shields, Gloves, and Eye Wash Facilities Should Be Available When Used With Chemicals Such as TSP.



more than 1,000 square feet. Used cleaning mixture is potentially hazardous waste (see Chapter 10); consult with your local water and sewage utility for directions on its proper disposal. Wash water should never be poured onto the ground. The wash water is usually filtered and then poured down a toilet (if the local water authority approves).

3. The HEPA/Wet Wash/HEPA Cycle

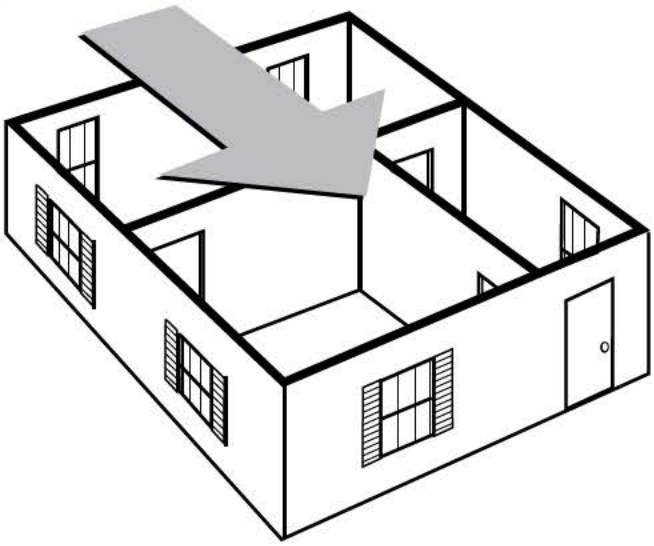
Typical Procedures

The usual cleaning cycle that follows lead hazard control activities is called the HEPA vacuum/wet wash/HEPA cycle and is applied to an entire affected area as follows:

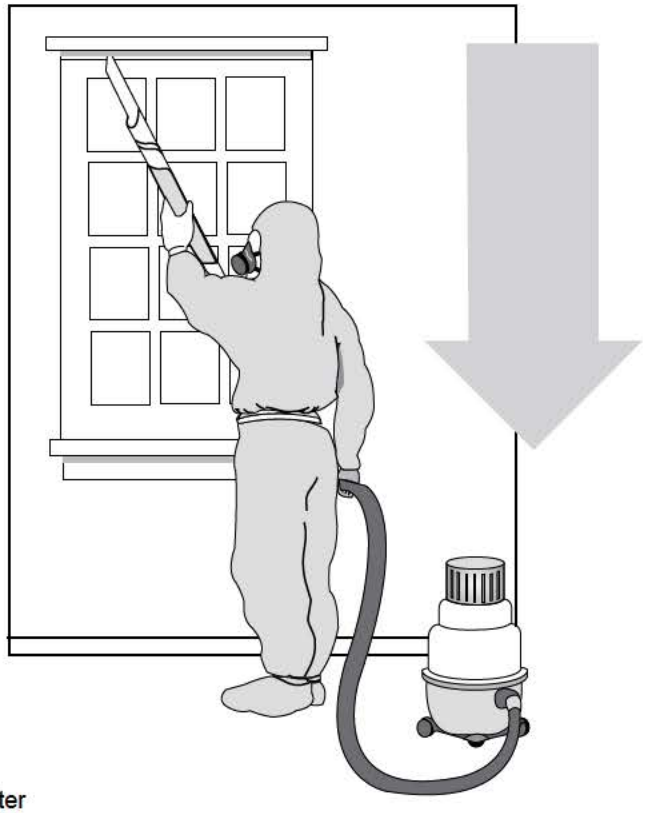
- First, the area is HEPA vacuumed.

Figure 14.4a The HEPA Vacuum, Wet Wash, HEPA Vacuum Cycle Helps in Meeting Clearance Standards.

HEPA vacuum all surfaces
Start at the end farthest from the main entrance/exit. As you vacuum, move towards the main exit and finish there.



Begin at the top of each room and work down. For example, start with the top shelves, the top of the woodwork, and so on, and work down to the floor. Do every inch of the windows, especially the window troughs.



Courtesy: Alice Hamilton Occupational Health Center

- Next, the area is washed down.
- After drying, the area is again HEPA vacuumed.

The rationale for this three-pass system is as follows:

- The first HEPA vacuum removes as much dust and remaining debris as possible.
- The wet wash further dislodges dust from surfaces.
- The final HEPA cycle removes any remaining particles dislodged but not removed by the wet wash.

Single-Pass Wet Wash/HEPA Vacuum

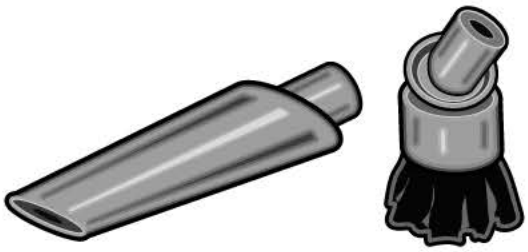
Some lead hazard control contractors have found HEPA spray cleaner vacuums to be a cost-effective alternative to the three-pass system. Similar to home carpet-cleaning machines, these vacuums simultaneously deliver a solution to the surface and recover the dirty solution. Theoretically, this process combines two of the steps in the HEPA vacuum/wet wash/HEPA cycle into one step. While anecdotal evidence indicates that the spray cleaner wet wash/HEPA is effective for some uses, limitations have been noted in its use for ceilings, vertical surfaces, and hard to reach areas. This device may be used as long as clearance standards are met.

Figure 14.4b (continued)

Use special attachments
Use the rubber cone where the floor meets the baseboard and along all the cracks in the floor boards. Use the brush tool for walls and woodwork.

Use the wheeled floor nozzle for bare floors and the carpet beater for rugs.

Move slowly
Vacuum slowly so the HEPA vacuum can pick up all the lead dust.



Rubber Cone **Dust Brush**

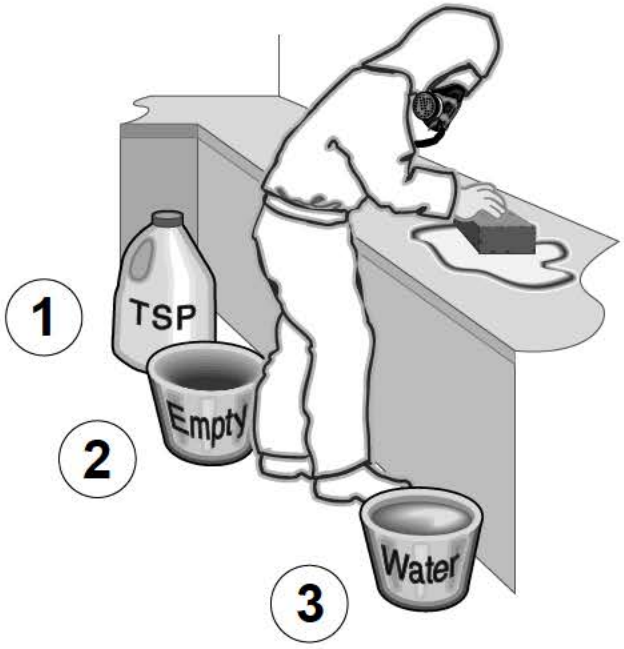
Powered Carpet Beater

Wheeled Floor Nozzle

Figure 14.4c (continued)

Wash all surfaces with suitable detergents

Wash *all surfaces* in the work area with suitable detergents, including areas that had been covered with plastic. Some wallpaper should only be HEPA vacuumed, since it may be damaged by the detergent.



Wipe All Surfaces

Wet Mop Floor

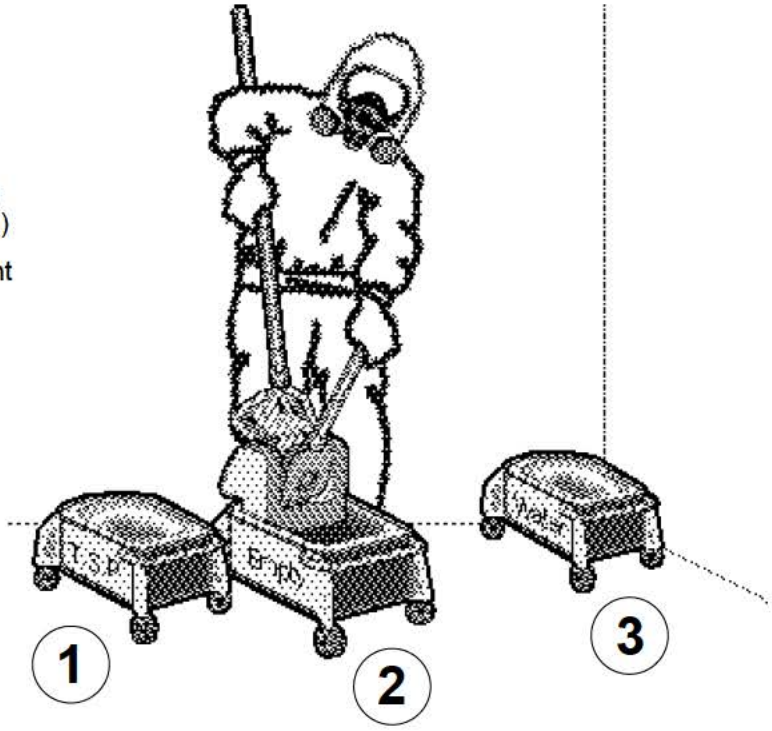
Don't Dry Sweep

Figure 14.4c (continued)

Use the 3-Bucket System.

To wash: Use string mops and mop buckets with wringers. (Some experts say NEVER use a sponge mop on the floor. Sponge mops may only push the lead around on the floor, not remove it.)

Dip the string mophead in the detergent wash in bucket #1. Mop the floor.



Squeeze out the mophead in empty bucket #2. Return to bucket #1 for more detergent solution and continue mopping. Repeat.

Use the third bucket for rinsing the floor.

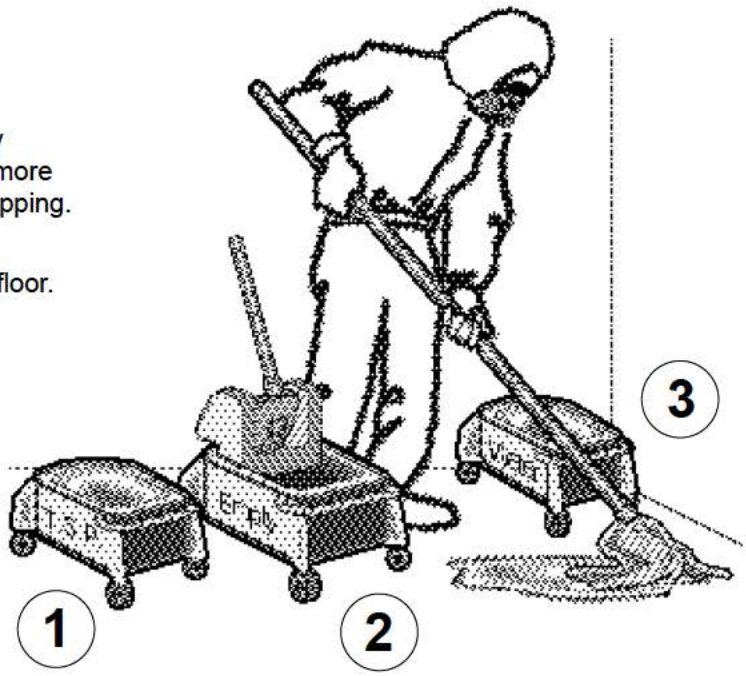
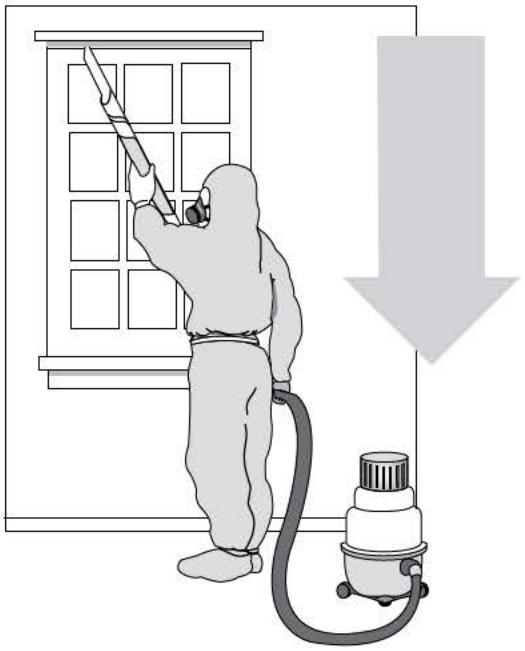


Figure 14.4d (continued)

HEPA vacuum all surfaces a final time
HEPA vacuum *all surfaces* in the work area, including areas that had been covered with plastic.

Starting at the far end, work towards the decontamination area. Begin with ceilings or the top of the walls and work down, cleaning the floors last. Do every inch of the windows, especially the troughs. Use the corner tool to clean where the floor meets the baseboard and all the cracks in the floor boards. Use the brush tool for the walls. Move slowly and carefully to get all the dust.



4. Sealing Floors

Before clearance, all floors without an intact, nonporous coating should be coated. Sealed surfaces are easier for residents to clean and maintain over time than those that are not sealed. Wooden floors should be sealed with a clear polyurethane or painted with deck enamel or durable paint. Vinyl tile, linoleum, and other similar floors should be sealed with an appropriate wax. Concrete floors should be sealed with a concrete sealer or other type of concrete deck enamel. However, if these floors are already covered by an effective coat of sealant, it may be possible to skip this step.

As an alternative to sealing, floors may be covered with new vinyl tile, sheet vinyl, linoleum flooring, or the equivalent to create a more permanent cleanable surface. New surfaces should be cleaned with a cleaning solution that is appropriate for that type of surface.

IV. Order of Cleaning Procedures During Lead Hazard Control

The special cleaning procedures to be followed during a lead-based paint hazard control project are discussed in chronological order below. Skipping steps in the process may result in failure to meet post-lead hazard control clearance standards.

A. Precleaning Procedures

Precleaning (i.e., cleaning conducted before lead hazard control is begun) is necessary only in dwelling units that are heavily contaminated with paint chips. Precleaning involves the removal of large debris and paint chips, followed by HEPA vacuuming. These steps may be followed by removal of occupant personal possessions, furniture, or carpeting, depending on the

Figure 14.5 Single-Pass HEPA Vacuum/Wet Wash Technology.

Worksite Preparation Level selected (see Chapter 8). If the furniture will not be cleaned, it should be removed from the area or covered with plastic prior to beginning the precleaning procedure. Carpeting should always be misted before its removal to control the generation of hazardous dust.

It is usually the resident's responsibility to remove most of his or her personal possessions. However, if necessary, owners or project management should be prepared to complete this activity before lead hazard control work begins. As a last resort, the contractor may pack any remaining belongings and carefully seal and move the boxes, supplying all necessary boxes, packing materials, and staff to complete the task. Following cleaning and clearance, the contractor should return all packed items to their appropriate places. Leaving these tasks to the contractor may be expensive and inefficient, since the contractor will need to be insured for this function if the occupant's

Figure 14.6 Precleaning Is Needed in Areas Where Contamination and Deterioration Are High.

belongings are damaged. Additionally, moving furniture, rugs, drapes, and other items owned by the occupant could increase leaded dust levels. Clearance should be conducted after cleaning but before resident items are moved back in.

B. Ongoing Cleaning During the Job

Periodic HEPA vacuuming during the lead hazard control work may be necessary to minimize tracking of dust and paint chips from one area to another (e.g., when a large amount of paint chips or dust is being generated).

C. Daily Cleaning Procedures

Cleaning activity should be scheduled at the end of each workday when all active lead hazard control throughout the dwelling has ceased. Sufficient time must be allowed for a thorough and complete cleaning (usually about 30 minutes to an hour). Daily cleaning helps achieve clearance dust levels by minimizing problems that may otherwise occur during final cleaning and limiting worker exposures. While daily cleaning can be skipped in vacant dwelling units, it is required when occupants will return in the evening. Under no circumstances should debris or plastic be left outside overnight in an unsecured area, even if the dwelling is vacant. Daily cleaning should consist of:

- Removing large debris.
- Removing small debris.
- HEPA vacuuming, wet clean, HEPA vacuuming (horizontal surfaces only).
- Cleaning exterior.
- Patching and repairing plastic sheeting.
- Securing debris/plastic.

Figure 14.7 Plastic Sheeting Should Be Repaired as Part of Daily Cleanup.

1. Large Debris

Large demolition-type debris (e.g., doors, windows, trim) should be wrapped in 6-mil plastic, sealed with tape, and moved to a secure area on the property designated for waste storage. All sharp corners, edges, and nails should be hammered down to prevent injury and minimize the tearing of plastic. It is not necessary to wrap each individual piece of debris in plastic if the entire load can be wrapped. A secure area either outside or inside the property must be designated as a temporary waste-storage area. Covered, secured, and labeled dumpsters placed on or near the property may be used. Proper segregation of waste should be enforced at this time (see Chapter 10).

2. Small Debris

After being misted with water, small debris should be swept up, collected, and disposed of properly. The swept debris should be placed in double 4-mil or single 6-mil polyethylene (or equivalent) plastic bags, properly sealed, and moved to the designated trash storage area. Trash bags should not be overloaded; overloaded bags may rupture or puncture during handling and transport.

3. Exterior Cleaning

Areas potentially affected by exterior lead hazard control should be protected via a containment system (see Chapter 8). Because weather can adversely affect the efficacy of exterior

containment, the surface plastic of the containment system should be removed at the end of each workday. On a daily basis, as well as during final cleaning, the immediate area should be examined visually to ensure that no debris has escaped containment. Any such debris should be raked or vacuumed and placed in single 6-mil or double 4-mil plastic bags, which should then be sealed and stored along with other contaminated debris. HEPA vacuuming is appropriate for hard exterior surfaces, not soil.

4. Worker Protection Measures

General worker protection measures are discussed in Chapter 9. Studies indicate that during daily cleaning activities, especially while wet sweeping, workers may be exposed to high levels of airborne dust. Therefore, workers should wear protective clothing and equipment, especially appropriate respirators.

5. Maintaining Containment

The integrity of the plastic sheeting used in a lead hazard control project must be maintained. During their daily cleaning activities, workers should monitor the sheeting and immediately repair any holes or rips with 6-mil plastic and duct tape.

V. Order of Final Cleaning Procedures After Lead Hazard Control

Before treated surfaces can be painted or sealed, final cleaning procedures must be completed. Because airborne dust requires time to settle, the final cleaning process should start no sooner than 1 hour after active lead hazard control has ceased in the room. See Appendix 11 for details regarding dust settling.

A. Final Cleaning

As the first stage in the final cleaning, floor plastic should be misted and swept as detailed earlier in this chapter. Upper-level plastic, such as that on cabinets and counters, should be removed first, after it has been misted with water *and cleaned*. All plastic should be folded carefully from the corners/ends to the middle to trap any remaining dust. Next, remove both layers of plastic from the floor.

Plastic sheets used to isolate contaminated rooms from noncontaminated rooms should remain in place until after the cleaning and removal of other plastic sheeting; these sheets may then be misted, cleaned, and removed last.

Removed plastic should be placed into double 4-mil or single 6-mil plastic bags, or plastic bags with equivalent (or better) performance characteristics, which are sealed and removed from the premises. As with daily cleanings, this plastic-removal process usually requires workers to use protective clothing and respirators.

After the plastic has been removed from the contaminated area, the entire area should be cleaned using the HEPA/wet wash/HEPA cycle, starting with the ceiling and working down to the floor. After surfaces are repainted or sealed, a final HEPA/wet wash/HEPA cycle may be necessary if accumulated dust caused by other work is visible.

1. Decontamination of Workers, Supplies, and Equipment

Decontamination is necessary to ensure that worker's families, other workers, and subsequent properties do not become contaminated. Specific procedures for proper decontamination of equipment, tools, and materials prior to their removal from lead hazard control containment areas should be implemented, as described below and in Chapters 9 and 10.

Work clothing, work shoes, and tools should not be placed in a worker's automobile unless they have been laundered or placed in sealed bags. All vacuums and tools that were used should be wiped down using sponges or rags with detergent solutions.

Consumable/disposable supplies, such as mop heads, sponges, and rags, should be replaced, after each dwelling is completed. Soiled items should be treated as contaminated debris (see Chapter 10).

Figure 14.8a Pick Up Corners of Plastic Sheeting.

Figure 14.8b Fold Plastic Inward.

Durable equipment, such as power and hand tools, generators, and vehicles, should be cleaned prior to their removal from the site; the cleaning should consist of a thorough HEPA vacuuming followed by washing.

B. Preliminary Visual Examination

After the preliminary final cleaning effort is completed, the certified supervisor should visually evaluate the entire work area to ensure that all work has been completed and all visible dust and debris have been removed. While the preliminary examination may be performed by the lead hazard control supervisor, contractor, or owner as a preparatory step before the final clearance examination, it does not replace the independent visual assessment conducted during clearance.

If the visual examination results are unsatisfactory, affected surfaces must be retreated and/or recleaned. Therefore, it is more cost effective to have the supervisor rather than the clearance examiner perform this initial examination.

C. Surface Painting or Sealing of Nonfloor Surfaces

The next step of the cleaning process is painting or otherwise sealing all treated surfaces except floors.

Surfaces, including walls, ceilings, and woodwork, should be coated with an appropriate primer and repainted. Surfaces enclosed with vinyl, aluminum coil stock, and other materials traditionally not repainted are exempt from the painting provision.

D. Final Inspection

The final clearance evaluation should take place at least 1 hour after the final cleaning. Clearance has three purposes: 1) to ensure that the lead hazard control work is complete, 2) to detect the presence of leaded dust, and 3) to make sure that all treated surfaces have been repainted or otherwise sealed. Clearance is usually performed after the sealant is applied to the floor. See Chapter 15 for information on clearance examination procedures.

E. Recleaning After Clearance Failure

If after passing the final visual examination, the dwelling unit fails the clearance wipe dust tests,

the HEPA/wet wash/HEPA cleaning cycle should be carefully and methodically repeated. Failure is an indication that the cleaning has not been successful. Recleaning should be conducted under the direct supervision of a certified supervisor. Care should be exercised during the recleaning of "failed" surfaces or components to avoid recontaminating "cleared" surfaces or components.

VI. Cleaning Cost Considerations

An important consideration in determining lead hazard control strategies and methods is the cost and difficulty of required daily and final cleanup operations and the ease with which one can meet dust-clearance standards. A general rule of thumb is that lead hazard control strategies that generate the most dust will have higher cleanup costs and higher initial clearance test-failure rates.

A. Initial Clearance Test Failure Rates

The likelihood of passing final dust-clearance tests is highly correlated with the chosen intervention strategy, methods, and care exercised by the contractor. For example, in one study (HUD, 1991) initial wipe-test failure rates were 14 percent for interior window sills, 19 percent for floors, and 33 percent for window troughs. The pass/fail rates for each surface were strongly associated with the dwelling unit abatement strategy employed. Chemical removal and hand-scraping strategies experi-enced higher failure rates than replacement and encapsulation/enclosure strategies (see Table 14.1).

However, results of the HUD demonstration project indicated that clearance failure is not solely related to abatement method. The report stated that "the diligence and effectiveness of an abatement contractor's cleaning process ... had a major impact on ... the likelihood of the dwelling unit to pass the final wipe test clearance" (HUD, 1991).

Figure 14.8c Dispose of Plastic Sheeting in a Plastic Trash Bag.

B. Key Factors In Effective Cleaning

Effective cleaning will be aided by adequate sealing of surfaces with polyethylene sheeting prior to lead hazard control, proper daily cleaning practices, good worker training, and attention to detail. Where poor worksite preparation is employed, additional cleaning may be required to meet clearance.

C. Special Problems

Surfaces such as porous concrete, old porous hardwood floors, and areas such as corners of rooms and window troughs pose especially difficult cleaning challenges. Porous concrete and corners of rooms normally require additional vacuuming to achieve an acceptable level of cleanliness.

The lead hazard control strategy of enclosure is frequently chosen for window troughs and for old porous hardwood floors due to the difficulty of adequately cleaning these surfaces. This

option provides not only a clean surface but a more permanently cleanable surface for dwelling occupants to maintain.

VII. Alternative Methods

Alternatives to the recommended cleaning tools and practices discussed in this chapter are available, some having significant potential for increasing effectiveness and lowering costs.

A recent Canadian study (CMHC, 1992) evaluated the effectiveness of contaminated dust cleanup activities using tools that would generally be available to construction contractors and homeowners. Vinyl flooring and carpeting were cleaned using several wet/dry vacuuming systems, sweeping, and wet mopping. The study found that regular vacuums with empty bags send a steady stream of fine particles into the air, while vacuums with partially filled bags were more efficient. This finding suggests the necessity for HEPA vacuums. Other vacuums may be used if workers do not experience increased exposures, if compliance with clearance standards is achieved, and if a variance from OSHA regulation (29 CFR 1926.62 (h)(4)) is obtained by the contractor or employer (if required).

Agitator heads on vacuums were demonstrated to significantly enhance vacuum effectiveness on carpets in cleaning up fine dust without increasing airborne dust levels. Table 14.2 suggests that a central vacuum with an agitator head is most efficient at removing dust and minimizing recontamination, probably because the vacuum exhaust is blown away from living areas. Because many houses do not have central vacuuming systems, a portable HEPA vacuum is the next best choice (see Table 14.2). Vacuums without agitator heads appeared to perform relatively poorly on carpets.

A. Vacuums

Regular (non-HEPA) dry vacuums potentially produce hazardous levels of airborne dust and therefore should be avoided. Externally exhausted vacuum units with adequate dust-retaining capability may be used. The OSHA lead standard requires the use of HEPA vacuum equipment (see 29 CFR 1926.62 (h)(4), which states, "where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters").

B. Trisodium Phosphate and Other Detergents

TSP detergents have been used successfully for a number of years in lead hazard control work. However, in recent years, other new cleaning agents have been developed specifically for leaded dust removal. The need for alternatives has been fueled by the fact that TSP is an eye

Table 14.1 Initial Cleaning Wipe-Test Failure Rates for Various Abatement Strategies

Dust Test Location	Hand Scrape w/Heat Gun	Chemical Removal	Enclosure	Encapsulation	Replacement	All Methods
Floors	28.8%	22.7%	20.0%	13.8%	12.5%	19%
Sills	24.4%	24.1%	8.2%	4.8%	17.4%	14%
Wells	44.5%	45.7%	23.7%	25.7%	21.0%	33%

Source: U.S. Department of Housing and Urban Development (August 1991) The HUD Lead-Based Paint Abatement Demonstration (FHA)

and skin irritant and is increasingly restricted from household use and unavailable in many local jurisdictions. TSP also damages some finishes. Recently reported trials of two new products suggest that alternative lead-specific cleaning agents may be more effective and safer than TSP (Grawe, 1993; Wilson, 1993).

These *Guidelines* do not prohibit the use of non-TSP cleaning agents. HUD encourages further evaluation of alternative cleaning methods. Use of any cleaning agent that results in compliance with clearance criteria is encouraged.

Table 14.2 Mass Removal Efficiency for Extended Vacuuming Cycles

Cycle Number	Mass Removal Efficiency Percentages			
	Cleaning Method			
	Central Vacuum—Plain Tool	Central Vacuum—Agitator Head	HEPA Vacuum	Portable Vacuum—Plain Tool
1	34.7	71.0	55.4	17.5
2	47.0	80.2	61.2	23.0
3	51.9	85.9	66.3	26.6
4	56.0	87.8	67.0	29.4
5	59.3	88.9	72.1	32.5
6	61.6	91.2	74.4	34.9
7	63.8	93.1	76.4	36.5
8	67.5	95.4	77.5	38.1
9	67.5	97.7	78.7	40.1
10	67.2	100.0	80.2	41.7
11		102.3	80.2	41.7
12		104.6	84.1	44.8
13		104.6	84.5	46.8
14		103.8	84.5	48.4
15				49.6
16				50.8
17				52.4
18				53.6
19				54.4
20				55.2

Source: Canada Mortgage and Housing Corporation: Saskatchewan Research Council (December 1992) *Effectiveness of Clean-up Techniques for Leaded Paint Dust*

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Ithaca Readiness Center
Ithaca, NY 14850

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 28, 2013

Bonus Environmental, LLC

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APPENDICES

January 28, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Ithaca Readiness Center, Ithaca, NY 14850

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Ithaca Readiness Center located at 1765 Hanshaw Road in Ithaca, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 14, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Ithaca Readiness Center is an Army National Guard armory comprised of offices, classrooms, locker rooms, storage rooms, a drill hall, a kitchen, a weight room, supply rooms, a boiler room, and a former indoor firing range. The point of contact for the approximately 31,512 ft² Ithaca Readiness Center is Mr. Non-Responsive. Six (6) full-time administrative personnel are employed at the Ithaca Readiness Center. Health and Safety programs available and reviewed include personal protective equipment (PPE), Lock-Out/Tag-Out, Asbestos Awareness, Fire Safety, and Confined Spaces. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twelve (12) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Ithaca Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
Ithaca RC-LW-1	11-14-12	Field Blank	---	< 12 μg
Ithaca RC-LW-2	11-14-12	Drill Hall, on floor, Northeast end	0.111	< 110
Ithaca RC-LW-3	11-14-12	Drill Hall, on floor, Southwest end	0.111	< 110
Ithaca RC-LW-4	11-14-12	Drill Hall, on top of Pepsi machine	0.111	< 110
Ithaca RC-LW-5	11-14-12	Drill Hall, on top of ice machine	0.111	< 110
Ithaca RC-LW-6	11-14-12	Drill Hall, on top of Destroyer Donation Box	0.111	< 110
Ithaca RC-LW-7	11-14-12	Training Area (Former Indoor Firing Range), on center of floor	0.111	280
Ithaca RC-LW-8	11-14-12	Training Area (Former Indoor Firing Range), on top of light fixture	0.111	< 110
Ithaca RC-LW-9	11-14-12	Training Area (Former Indoor Firing Range), on top of locker #80	0.111	170
Ithaca RC-LW-10	11-14-12	Kitchen, on top of microwave	0.111	< 110
Ithaca RC-LW-11	11-14-12	Women's Locker Room, on top of locker #31	0.111	250
Ithaca RC-	11-14-12	Classroom 117, on window sill	0.111	< 110

Army National Guard – Ithaca Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-12				
Ithaca RC-LW-13	11-14-12	Superintendent's Office, on top of filing cabinet	0.111	< 110

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range is currently used as a Training Area. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Ithaca Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified areas of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling paint in the following areas:

- Approximately 35 ft² peeling white paint in the Telecommunication's Room (118);
- Approximately 30 ft² peeling white paint in the Storage (121);
- Approximately 40 ft² peeling white paint in the Women's Locker Room (123);
- Approximately 160 ft² peeling white paint in the Men's Locker Room (124);
- Approximately 200 ft² peeling white paint in the Men's Locker Room (131);
- Approximately 200 ft² peeling white paint in the Supply Room (136);
- Approximately 150 ft² peeling white paint in the Storage Room (140);
- Approximately 35 ft² peeling off-white paint in the Drill Hall (149)

Each of the areas containing peeling paint were on or near ceilings, and therefore were inaccessible. It was reported to Bonus Environmental, LLC by site contact Ray Carmody that the peeling paints had previously been tested, and analytical results indicated that they were negative for lead-content.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Ithaca Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Ithaca Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified water-stained/water-damaged/moldy dropped-ceiling tiles located in the following areas:

- Approximately 1 ft² of stained dropped-ceiling tiles within the Office (114);
- Approximately 1 ft² of stained DCT within the Office (111);
- Approximately 1 ft² of stained DCT within the Office (113);
- Approximately 14 ft² of stained DCT within the Hallway;
- Approximately 6 ft² of stained DCT within the NCO Club (108);
- Approximately 1 ft² of stained DCT within the Security Office (106);
- Approximately 11 ft² of stained DCT within the Office (119);
- Approximately 1 ft² of stained DCT within the Recruiting Office (105);
- Approximately 22 ft² of stained/moldy DCT within the Classroom (146);
- Approximately 34 ft² of stained/moldy DCT within the Weight Room (126)

3.4 - Housekeeping

During the industrial hygiene evaluation of the Ithaca Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Ithaca Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Ithaca Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Ithaca Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 402 ppm to 516 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 3.4 ppm to 5.9 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Ithaca Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 62.0 to 66.8ºF and are not considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Ithaca Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 30.7% to 41.6%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Ithaca Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, northeast side of building (mostly cloudy)	402	5.9	26.8	55.1
Security Office (106) (4 people in room)	516	4.4	41.6	**66.8**
Office (109)	409	3.9	37.0	**66.7**
Classroom (117)	429	3.9	37.1	**66.6**
Weight Room (126)	418	4.5	36.1	**64.2**
Training Area (129)	423	4.5	30.7	**64.9**
Classroom (146)	441	4.1	40.2	**62.0**
Kitchen (144)	409	3.4	33.6	**65.1**
Storage Room (140)	411	3.7	33.7	**66.3**
Supply Room (138)	414	3.9	33.0	**65.8**
Drill Hall (149)	417	3.4	36.3	**64.6**

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Ithaca Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Ithaca Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Office (114)	33.9	50	No
Office (115)	53.6	50	Yes
Office (116)	56.6	50	Yes
Office (111)	50.1	50	Yes
Office (112)	62.7	50	Yes
Office (113)	153.9	50	Yes
Office (109)	38.6	50	No
Hallway	17.5	5	Yes
NCO Club (108)	34.4	10	Yes
Classroom (117)	47.1	30	Yes
Superintendent's Office (107)	71.0	50	Yes
Security Office (106)	100.5	50	Yes
Telecommunication's Room (118)	21.5	30	No
Office (119)	23.2	50	No
Storage (120)	29.8	30	No
Storage (121)	19.6	30	No
Recruiting Office (105)	70.2	50	Yes
Women's Restroom (122)	14.0	5	Yes
Women's Locker Room (123)	78.9	7	Yes
Men's Restroom (125)	14.8	5	Yes
Men's Locker Room (124)	26.4	7	Yes
Classroom (146)	44.3	30	Yes
Weight Room (126)	22.7	30	No
Storage (130)	23.2	30	No
Training Area (129) (Former Indoor Firing Range)	21.6	30	No
Storage (128)	12.9	30	No
Men's Locker Room (131)	7.1	7	Yes
Men's Restroom (132)	16.7	5	Yes
Men's Shower (134)	14.2	7	Yes
Drill Hall (149)	29.0	30	No
Storage (147)	4.4	30	No
Supply Room (136)	10.6	30	No
Supply Room (138)	12.1	30	No
Storage Room (140)	6.3	30	No
Kitchen (144)	29.8	50	No
Food Storage (143)	8.1	30	No
Scullery (145)	33.1	30	Yes
Boiler Room (142)	16.1	30	No
Storage (141) (POL Room)	17.3	30	No

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Ithaca Readiness Center located at 1765 Hanshaw Road in Ithaca, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on November 14, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Ithaca Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:

    - Training Area (Former Indoor Firing Range), on center of floor
    - Women's Locker Room, on top of locker #31

2. Bonus Environmental, LLC identified areas of peeling paint which may contain detectable levels of lead, potentially posing a lead exposure hazard. Bonus Environmental, LLC was informed that these paints had previously tested negative for lead-content. Peeling paint was found in the following areas:

    - Approximately 35 ft² peeling white paint in the Telecommunication's Room (118);
    - Approximately 30 ft² peeling white paint in the Storage (121);
    - Approximately 40 ft² peeling white paint in the Women's Locker Room (123);
    - Approximately 160 ft² peeling white paint in the Men's Locker Room (124);
    - Approximately 200 ft² peeling white paint in the Men's Locker Room (131);
    - Approximately 200 ft² peeling white paint in the Supply Room (136);
    - Approximately 150 ft² peeling white paint in the Storage Room (140);
    - Approximately 35 ft² peeling off white paint in the Drill Hall (149)

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified water-stained/water-damaged/moldy dropped-ceiling tiles located in the following areas:

    - Approximately 1 ft² of stained dropped-ceiling tiles within the Office (114);
    - Approximately 1 ft² of stained DCT within the Office (111);
    - Approximately 1 ft² of stained DCT within the Office (113);
    - Approximately 14 ft² of stained DCT within the Hallway;
    - Approximately 6 ft² of stained DCT within the NCO Club (108);
    - Approximately 1 ft² of stained DCT within the Security Office (106);
    - Approximately 11 ft² of stained DCT within the Office (119);
    - Approximately 1 ft² of stained DCT within the Recruiting Office (105);
    - Approximately 22 ft² of stained/moldy DCT within the Classroom (146);
    - Approximately 34 ft² of stained/moldy DCT within the Weight Room (126)

5. Bonus Environmental, LLC found the housekeeping practices within Ithaca Readiness Center in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Ithaca Readiness Center. All were found to be within their acceptable ranges/limits; with the exception of the temperature readings, which were all low.

8. Areas within the Ithaca Readiness Center facility were identified as improperly illuminated.

9. Health and Safety programs available and reviewed at the Ithaca Readiness Center included personal protective equipment (PPE), Lock-Out/Tag-Out, Asbestos Awareness, Fire Safety, and Confined Spaces. All were found to meet the minimum requirements.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

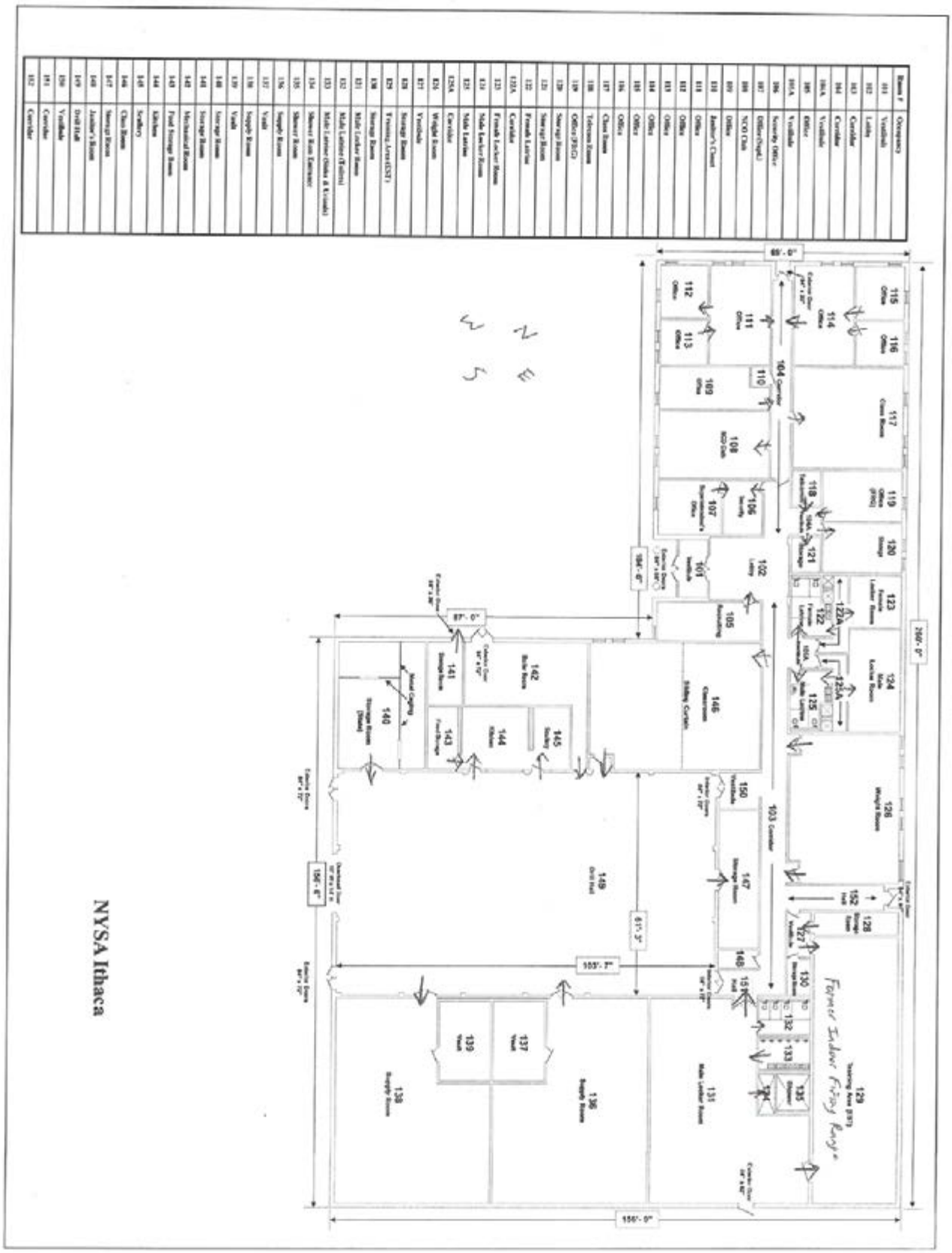
Non-Responsive

Principal
Bonus Environmental, LLC

Ithaca RC_12_Report.docx

Appendix A

Shop Diagram and Air Flow Patterns



Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Ithaca RC	**Chain Of Custody:**	514541
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	1765 Hanshaw Road, Ithaca, NY 14850	**Date Submitted:**	11/21/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/27/2012 **Report Date:** 11/27/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13016577	IthacaRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13016578	IthacaRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016579	IthacaRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016580	IthacaRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016581	IthacaRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016582	IthacaRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016583	IthacaRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft^2	31	280	ug/ft^2	
13016584	IthacaRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016585	IthacaRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft^2	19	170	ug/ft^2	
13016586	IthacaRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016587	IthacaRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft^2	27	250	ug/ft^2	
13016588	IthacaRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016589	IthacaRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlab.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Ithaca RC	Chain Of Custody:	514541
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	1765 Hanshaw Road, Ithaca, NY 14850	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/27/2012 Report Date: 11/27/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Non-Responsive

Analys

Non-Responsive

Technical Manag

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514541

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Ithaca RC
2. Job Location: 1765 Hanshaw Rd, Ithaca NY 14850
3. Job #: 1661-15 PO #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone #
5. Submitted by: Non-Responsive Signature

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	☒ Include COC/Field Data Sheets with Report
❑ 24 Hours Time Due:	❑ Next Day ☒ 5 Day + ❑ Results Required By Noon	☒ Email: Non-Responsive bonusenvironmental.com
Comments:	❑ 2 Day Date Due: 11/28/12	☒ Fax: us.army.mil
		☒ Verbal us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)

PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)

MISC
❑ Vermiculite
❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*this recommended that blank samples be submitted with all air and surface samples

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)

TEM Dust*
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 160.2 (QTY)
❑ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
❑ Pb Paint Chip (QTY)
☒ *Pb Dust Wipe (Wipe type: Ghost) 13 (QTY)
❑ *Pb Air (QTY)
❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ *Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ *Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ *Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

SAMPLE INFORMATION				ANALYSIS							MATRIX					CLIENT CONTACT
CLIENT ID #	SAMPLE LOCATION/ID	DATE/ TIME	VOL (L/ Wipe Area)	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AQUEOUS	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	✳ SEE ATTACHED FIELD DATA SHEETS	✳					✳				✳					
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11/21/12 @ 11:25 Via: FEDEX By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: SBH 1991-5736-6925

Surface Sampling Field Data Sheet

Date Collected: 11-14-12
Job Name: Ithaca RC
Company: Bonus Environmental, LLC
Job Number: 1061-15
Job Location:
Phone Number: 989-779-7686
Contact Person: Non-Responsive
Address: 1765 Hanshaw Rd
Ithaca, NY 14850
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Ithaca RC-LW-1	Field Blank	—	—	Ghost wipe
Ithaca RC-LW-2	Drill Hall	On Floor, NE end	4"x4"	
Ithaca RC-LW-3	Drill Hall	On Floor, SW end		
Ithaca RC-LW-4	Drill Hall	On top of Pepsi Machine		
Ithaca RC-LW-5	Drill Hall	On top of Ice Machine		
Ithaca RC-LW-6	Drill Hall	On top of Destroyer Donation Box		
Ithaca RC-LW-7	Training Area (Former Indoor Firing Range)	On Center of Floor		
Ithaca RC-LW-8	Training Area (Former Indoor Firing Range)	On top of light Fixture		
Ithaca RC-LW-9	Training Area (Former Indoor Firing Range)	On top of Locker #80		
Ithaca RC-LW-10	Kitchen	On top of microwave		
Ithaca RC-LW-11	Women's Locker Rm	On top of Locker #31		
Ithaca RC-LW-12	Classroom 117	On window sill		
Ithaca RC-LW-13	Superintendent's office	On top of Filing Cabinet	↓	↓

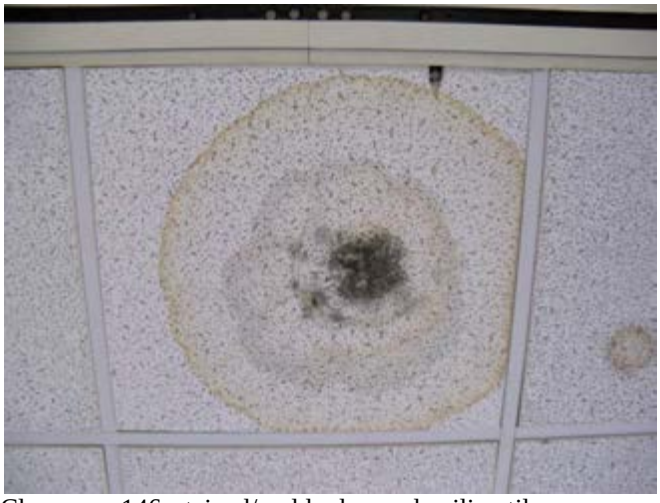
Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Photographs

Building exterior, looking east

POL room



Classroom 146, stained/moldy dropped-ceiling tile

Boiler room

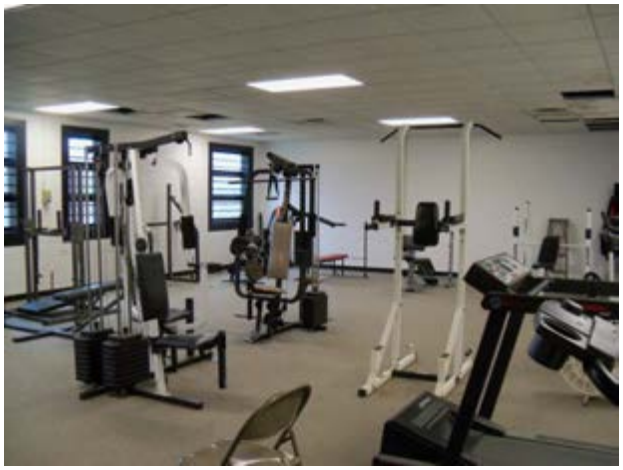
Kitchen

Drill hall, peeling off-white paint

Drill Hall

Men’s locker room

Training room (former indoor firing range)



Weight room

Telecom room, peeling white ceiling paint

Appendix D

References

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 Jan 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

ECS CAROLINAS
Geotechnical • Construction Materials • Environmental

November 17 2008

Ms. Non-Responsive
National Guard Bureau Region North
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

Reference: Industrial Hygiene Survey
Readiness Centers (RC)
Jamaica, New York 11433
ECS Project No. 14-4876

Dear Ms. Non-Responsive

ECS Carolinas, LLP (ECS) is pleased to provide the results of our Industrial Hygiene survey for the referenced facility. Our services were provided in accordance with Army National Guard work order number W912K6-08-F-0063, dated June 12, 2008 and the requirements of the National Guard Bureau Region North Industrial Hygiene Office "*Statement of Work*".

If there are questions regarding this report, or a need for further information, please contact us.

Respectfully submitted,

ECS CAROLINAS, LLP

Non-Responsive

Industrial Hygiene Project Manager

Non-Responsive

Principal Scientist

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68 Global Drive Greenville, South Carolina 29607 (864) 987-1610 FAX (864) 987-1615 www.ecslimited.com
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Richmond, VA • Roanoke, VVA • San Antonio, TX • Williamsburg, VA • Wilmington, NC • Winchester, VA • York PA
*Testing Services Only

INDUSTRIAL HYGIENE SURVEY

Conducted on

READINESS CENTER
93-05 168TH STREET
JAMAICA, NEW YORK 11433

ECS Project No. 14-4876

For

National Guard Bureau
Region North Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

November 17, 2008

INDUSTRIAL HYGIENE SURVEY
READINESS CENTER
93-05 168TH STREET
JAMAICA, NEW YORK 11433

TABLE OF CONTENTS

SECTION **PAGE**

APPENDIX

INDUSTRIAL HYGIENE SURVEY
READINESS CENTER
93-05 168TH STREET
JAMAICA, NEW YORK 11433

1.0 EXECUTIVE SUMMARY

ECS Carolinas, LLP (ECS) has completed an Industrial Hygiene Survey at the facility located at 93-05 168th Street in Jamaica, New York, 11433. The report was prepared in general accordance with the *Statement of Work* provided by the National Guard Bureau Industrial Hygiene Region North. The objective of the survey was to identify and measure the existence and extent of potentially hazardous operations or conditions at the Army National Guard (ARNG) facilities identified in the work order. The surveys were performed to establish a baseline of workplace conditions or to update a previous survey and employee exposure histories.

The survey involved a facility reconnaissance and sampling of the Readiness Centers (RC), which serve as recruitment facilities and administration offices with a small garage or mechanics shop to maintain various ARNG vehicles and equipment for the supported units when necessary. Jamaica RC included a garage, men and women's locker rooms, lunch room/kitchen, gym, tool room, steam room, administrative offices on the first, second and third levels, battery room, utility room, a vault and conference rooms. At the time of the survey, several members of the unit were deployed and the shop was not operating at full capacity. The point of contact for the RC-Jamaica facility was Mr. Non-Responsive.

Lighting measurements conducted during the survey indicated the illumination levels in the vehicle maintenance area are below the required levels.

The physical facility and the site health and safety plans were reviewed. Some written safety programs were missing or not provided to ECS. This missing information should be prepared for the facility and provided during the next facility survey. During the physical assessment of the facility, the following items were noted:

Vehicle Maintenance Area/Garage:

- Material Safety Data Sheets (MSDS) were observed in the area.
- Fire extinguishers are present and are current with routine inspections.
- Generally clean work and storage areas.

Tools Storage:

- Tool storage area.
- Generally clean and safe storage area.

Storage Room:

- General materials storage room.
- Fire extinguisher inspection is outdated.
- Generally clean work and storage area.

Boiler Room Basement:

- Peeling paint found in stairwell leading into the Boiler Room.
- Miscellaneous flammable and unidentified materials stored improperly and not labeled.
- General housekeeping needs to be addressed.
- Fire extinguisher inspections are outdated.
- Standing water found in several areas of basement
- Deteriorating insulation on piping from the boiler.

Sub-Basement:

- Miscellaneous flammable and unidentified materials stored improperly and not labeled.
- Oily substance on floor in hallway causing a slip hazard.
- Fire extinguisher inspections are outdated.
- General housekeeping needs to be addressed.

Administrative Areas (Office's, Conference Room, Drill Hall, Men's and Women's Locker Rooms):

- Posted training documents, warning signs, best work practices, and fire evacuation plans.
- Fire extinguishers present and are current with routine inspections.
- Windows air conditioning units located in several administration offices.
- Generally clean areas.

2.0 INTRODUCTION

2.1 Scope of Work

ECS Carolinas, LLP (ECS) has completed an Industrial Hygiene Survey at the facility located at 93-05 168th Street, Jamaica, New York 11433. The report was prepared in general accordance with the *Statement of Work* provided by the National Guard Bureau Industrial Hygiene Region North. The objective of the survey was to identify and measure the existence and extent of potentially hazardous operations or conditions at the Army National Guard (ARNG) facilities identified in the work order. The surveys were performed to establish a baseline of workplace conditions or to update a previous survey and employee exposure histories.

A total number of sixty employees work at the RC. At the time of the survey, approximately 15 members of the unit were present. Several members of the unit were deployed and the shop was not operating at full capacity. The point of contact for the RC-Jamaica facility was Felix Ramos.

2.2 Facility Information and Description

The survey involved a facility reconnaissance and sampling of RC-Jamaica. Readiness Centers (RC) serve as recruitment facilities, administration offices and some have small garage or mechanics shop to maintain various ARNG vehicles and equipment for the supported units when necessary. RC-Jamaica included a garage, boiler room, locker rooms, kitchen, administrative offices, conference room and a drill hall. At the time of the survey, several members of the unit were deployed, approximately four (4) persons were in the center and the shop was not operating at full capacity.

3.0 CHEMICAL SAMPLING

3.1 Lead Wipes

Wipe samples were collected for lead dust in the administrative areas and mechanics shop of the garage in the facility. Sampling was conducted to determine if cross contamination was occurring in the non-maintenance areas of the facility.

The following results are *below* the NGB Region North IH Office Guidance level of 200 µg/ft^2:

Table 3.1.1 Lead Wipe Results		
Sample Number	**Sample Location**	**Results (µg/ft^2)**
LW-13	Sub-basement counter top Restricted Area-28	110
LW-33	First Floor Entryway	150

The Indoor Firing Range (IFR) at this facility has been converted to another use on the site. Lead wipes were collected according to the scope of work for the items still present in the IFR. The following results are *above* the NGB Region North IH Office Guidance level of 200 µg/ft^2.

Table 3.1.1 Lead Wipe Results		
Sample Number	**Sample Location**	**Results (µg/ft^2)**
LW-1	Left side of Firing Range	2,900
LW-2	Right Side of Firing Range	7,900
LW-3	Sub-basement Firing Range	1,500
LW-4	Pump room near floor drain	15,000
LW-5	Storage Room-Sub basement	7,900
LW-6	First Floor Women' Locker Room	2,400
LW-7	Top of parts bin for bays 1-3	220
LW-9	Sub-basement – Top of sewage pipe	58,000
LW-10	Garage-Outside restroom	18,000
LW-11	Third Floor Room 312	6,600
LW-12	Vehicle Storage Area	2,900
LW-14	Sub-basement Counter top Restricted Area-28	1,900
LW-15	Drill Hall G-427	8,200
LW-16	Boiler room-on floor by stairs with handrail	3,800
LW-17	Bay 4 & 5 – Top of parts bin	3,300
LW-19	Drill Hall-Steps going upstairs	540
LW-20	First Floor-Room #107	1,100
LW-21	Sub-basement-Halfway down hall on floor	20,000
LW-22	Sub-basement-Floor outside restricted door #27	24,000
LW-23	Basement-Stairs going up to first floor	2,100

Table 3.1.1 Lead Wipe Results		
Sample Number	**Sample Location**	**Results (µg/ft²)**
LW-24	Boiler Room-table top	2,300
LW-25	Office 101-Window Sill	31,000
LW-26	Sub-basement	7,400
LW-27	Room #216-Top locker	4,000
LW-28	Second floor-Balcony	7,500
LW-29	Board Room	3,400
LW-30	Second floor-floor outside	460
LW-31	Sub-basement-Concrete block	220,000
LW-32	Third Floor-Electrical conduit	2,400
LW-34	Basement-Testing	1,000
LW-35	Drill Hall-Back third of	1,400
LW-36	Third Floor-Room #302	3,200
LW-37	Drill Hall	4,000

3.2 Additional Sampling Information

Personnel samples measuring airborne lead levels were collected from within the breathing zone of two (2) staff members on site at the RC-Jamaica facility. Each employee was monitored for their full time on-site the day the site visit was conducted, which was approximately four and a half hours. Samples indicated that the results were below the OSHA permissible exposure limit. Results have been listed in the following table:

Table 3.2.2 Personnel Samples-Lead					
Staff Member Monitored	Pump ID	Sample Collection Times (Hours)	Total Liters (L) collected	Concentration Ug/m³	Lab Results Above Permissible Exposure Limit
Non-Responsive Non-Responsive	3051	1200-1630	690.7	<4.3 ug/m³	No
Non-Responsive	3056	1200-1630	570.8	<5.3 ug/m³	No

3.3 Additional Sampling Information

Samples were not collected for welding fumes, volatile organic compounds or acid gases during the survey. Welding operations and parts washing are not conducted at this facility.

Indoor air quality measurements including temperature, relative humidity and carbon dioxide were collected in various locations throughout the facility and are presented in the following table:

Table 3.3.1 Indoor Air Quality (IAQ) Meter Measurements			
Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)
Room #109	77.3	33.6	440
Room #210	78.0	45.2	812
Room #310	77.4	38.5	753
Testing Room	79.5	51.5	387
Room #5	76.0	46.9	411

The American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) has determined that a carbon dioxide level greater than 1000 ppm indicates that not enough outdoor air is coming into the building to dilute the carbon dioxide level. The carbon dioxide levels measured at the NYC 5th Avenue RC facility are well below those limits, indicating that air is being circulated properly throughout the building.

ASHRAE standards state that systems within the building should establish a relative humidity in occupied space to be 60% or less. The levels measured at the NYC 5th Avenue RC facility indicate that the relative humidity is below the required standard for indoor air quality.

Since outside air readings were not required to be collected, the results were compared to the ASHRAE standards for ventilation of acceptable indoor air quality.

Noise sampling was not conducted during the survey; active vehicle maintenance does not occur regularly on this site.

4.0 VENTILATION ASSESSMENT

4.1 General Ventilation

General building ventilation is provided to the administrative areas of the building through wall uni-vent units. Neither central air nor heat is present at the site. Several of the offices in the administration areas on the first, second and third floor of the building are equipped with window mounted air conditioning units.

In the maintenance areas cooling is provided by the roll-up doors and fans. LEV units are not present. Ventilation measurements were not collected in the battery storage room. Roll-up doors located in the vehicle maintenance area provide fresh air to the room when the door remains open. Direct ventilation is not present.

5.0 LIGHTING EVALUATION

Illumination levels were recorded in each area in closed door conditions and compared to the ANSI minimum lighting requirement (ANSI/IESNA RP-7-01). Recorded illumination measurements are presented in the following table and are presented on the illumination plan in Appendix I.

Table 5.1 Illumination Measurements

Location	Measured Illumination Level in Foot Candles (FC)	Required Illumination Level	Requirement Met?
Room #102	22.9	10-50	Yes
CSM Office	55.7	30-50	Yes
Bn CDR Room #104	10.7	50	No
BN XO PSNCO Room #109	66.8	50	Yes
Room #106	22.0	10-50	Yes
Board Room #110	22.5	30-50	No
Female Locker Room #111	22.6	7	Yes
Female Locker Room #111-Lav.	12.1	5	Yes
R&R Room #115	55.9	10	Yes
Superintendent's Office-1st Fl.	99.1	50	Yes
Main Entryway	12.1	10	Yes
Locker Room #216	19.9	7	Yes
Room #216-A	30.7	10-50	Yes
Room #202	45.9 & 54.9	10-50	Yes
Administration Offices	41.0	30-50	Yes
Locker Room #207	19.0	7	Yes
Hallway-Room #200	15.3	5	Yes
Room # 210	41.7	10-50	Yes

Location	Measured Illumination Level in Foot Candles (FC)	Required Illumination Level	Requirement Met?
Locker Room #211	24	7	Yes
128th EOC Room #302	52.2	30-50	Yes
Weight Room #307	51.6	30	Yes
HHB Admin. #310	22.7	30-50	No
Locker Room #312	14.1	7	Yes
Locker Lav. & Shower Room #312A	32.5	7	Yes
Room #313	9.2	10-50	No
Supply Room #314	41.0	30	Yes
CDR Room #315	46.0	50	No
Locker Room #316	38.0	7	Yes
Locker Room #316A	12.3	7	Yes
Locker #316B	22.5	7	Yes
Boiler Room	12.1	30	No
Room #5	63.1	10-50	Yes
Testing Room Basement	25.1	30-50	No
Electronic Firing Range (Behind Firing Line)	10.1	50	No
Hall under Drill Bay	3.2	5	No

6.0 REVIEW OF SAFETY PLANS AND POLICIES

6.1 Written Safety Plans

ECS reviewed on-site health and safety plans during our site visit. Below are the listed plans available and the plans recommended for these facilities.

Plans Not Available to ECS:

- Emergency Action/Fire Prevention
- Hearing Conservation

- Hazard Communication

6.2 Personal Protective Equipment (PPE)

Written information could not be made available when requested for review by ECS during the site visit. PPE is not a requirement at the site. Hearing protection: ear plugs, have been provided to staff and may be used at their own discretion. No additional information was available for review.

7.0 PHYSICAL CONDITIONS & EMPLOYEE INTERVIEWS

ECS observed damaged green peeling paint in the Pump Room, white peeling paint in the stairwell leading down to the boiler, and peeling paint in the sub-basement Pump Room. Three paint chip bulk samples were taken and sent for analysis to AMA Analytical Services, Inc. to determine the presence of lead-based paint in those areas.

Wipe samples were collected for lead dust throughout the administrative areas, basement, boiler room and drill hall in the facility. Lab results indicated that lead was detected on several of the wipe samples collected. Sampling was conducted to determine if cross contamination was occurring in the non-maintenance areas of the facility.

ECS observed materials in the Jamaica RC facilities that have the potential to be asbestos containing material (ACM). Samples of the pipe insulation in the boiler room and sub-basement of the boiler room were collected for analysis. Results are presented in the following table:

Table 7.1 Asbestos Summary Table

Sample Number	Description of Material	Location	Results
7A	TSI Pipe Insulation	Boiler Room	No asbestos detected
7B	TSI Pipe Insulation	Boiler Room	No asbestos detected
8A	TSI Pipe Insulation	Sub-Basement Old Boiler	40 % Chrysotile
8B	TSI Pipe Insulation	Sub-Basement Old Boiler	30 % Chrysotile

8.0 FINDINGS AND CONCLUSIONS

Following are the findings of this Industrial Hygiene Survey:

- Wipe samples were collected for lead dust throughout the administrative areas, basement, boiler room and drill hall in the facility. Lab results indicated that lead was detected on several of the wipe samples collected. Sampling was conducted to determine if cross contamination was occurring in the non-maintenance areas of the facility. Based on the analytical results, lead dust appears to be present in a majority of the building. Levels above the NGB Guidance levels were detected on 35 of the 37 samples collected within the building.

- Lighting measurements conducted during the survey indicated the illumination levels in the office areas and the sub-basement walk ways are below the required levels.

- Insulation on piping associated with the Boiler in the Sub-basement was noted to be deteriorating and was classified as "Significantly Damaged". Lab results indicate that this material contains asbestos.

- Standing water was found in the Boiler House Basement. Drains may have been clogged or sump pumps might not have been in operation.

- Fire-extinguishers (FE) in the facility need to be up to date with safety inspections.
    - FE in Board Room is missing a tag.
    - FE in All outside Break Room-Last inspection was in 2007.
    - FE in basement-Last inspection was in May 2008.
    - A total of three (3) FEs in the sub-basement were inspected in 2004.

- Oil is collecting on floor and creating a slip-hazard half way down the hallway in sub-basement under the Drill Hall.

- Some written safety programs were missing or not provided to ECS. This missing information should be prepared for the facility and provided during the next facility survey.
    - Emergency Action/Fire Prevention
    - Hearing Conservation

- Flammable materials need to be labeled and placed in proper storage containers. Fire-retardant cabinets should be made available and placed in clearly marked areas. Placards should be placed on the cabinets and materials should have MSDS sheets on-site.
    - Room 107-A case of "Handy-Fuel" in an office, which was unlocked. This material is extremely flammable.

- Five-gallon pail of Kerosene clearly marked as being a flammable material. The material was sitting on floor in the boiler room and was not in a locked cabinet.

9.0 REFERENCES

Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration.

Lead - (29 CFR 1910.1025(h))

American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2008 Edition

Industrial Ventilation: A Manual of Recommended Practice for Design, 25th Edition

Georgia Army National Guard: Standard Army Safety and Occupational Health Inspection Checklist; 1 October 1999 Edition

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Ventilation for Acceptable Indoor Air Quality, 62-1-2007.

National Emission Standard Hazardous Air Pollutants (NESHAP) - The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3))

Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM)

The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation

29 CFR 1910.1000 Air Contaminants, Table Z-1, Occupational Safety and Health Administration, US DOL, Washington, DC

ANSI RP-1-04, American National Standard Practice for Office Lighting, 2004

ANSI RP-7-01, Lighting Industrial Facilities, 2001

Industrial Ventilation, A Manual of Recommended Practice, 25th Edition, ACGIH, 2004

2008 TLVs and BEIs, ACGIH, 2008

DA PAM 40-501, Hearing Conservation Program, Department of the Army, 1998

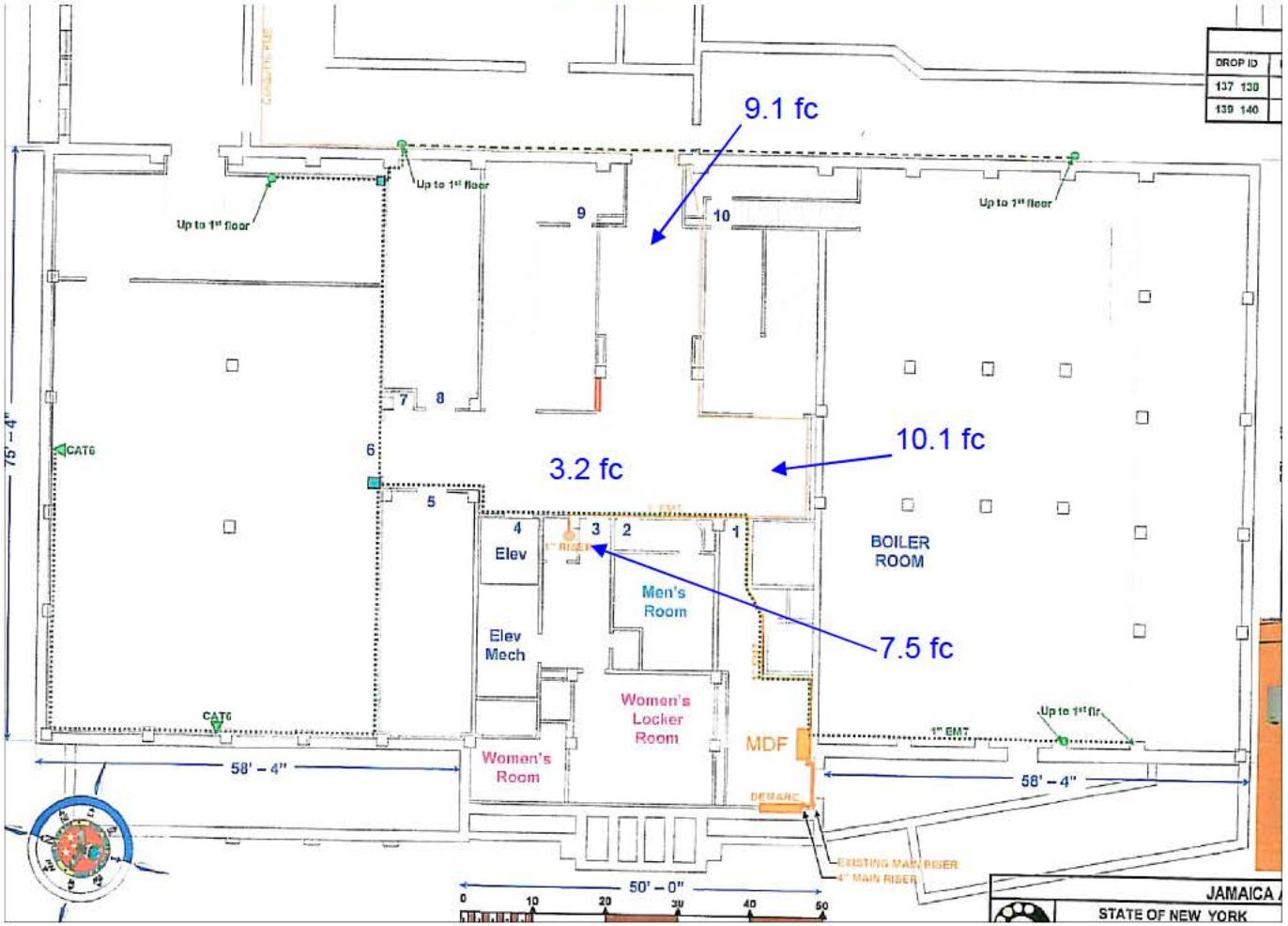
ANSI/ASHRAE 55-204

ANSI/ASHRAE 62.1-2007

APPENDIX I

FIGURES

READINESS CENTER
93-05 168TH STREET
JAMAICA, NEW YORK 11433
Basement

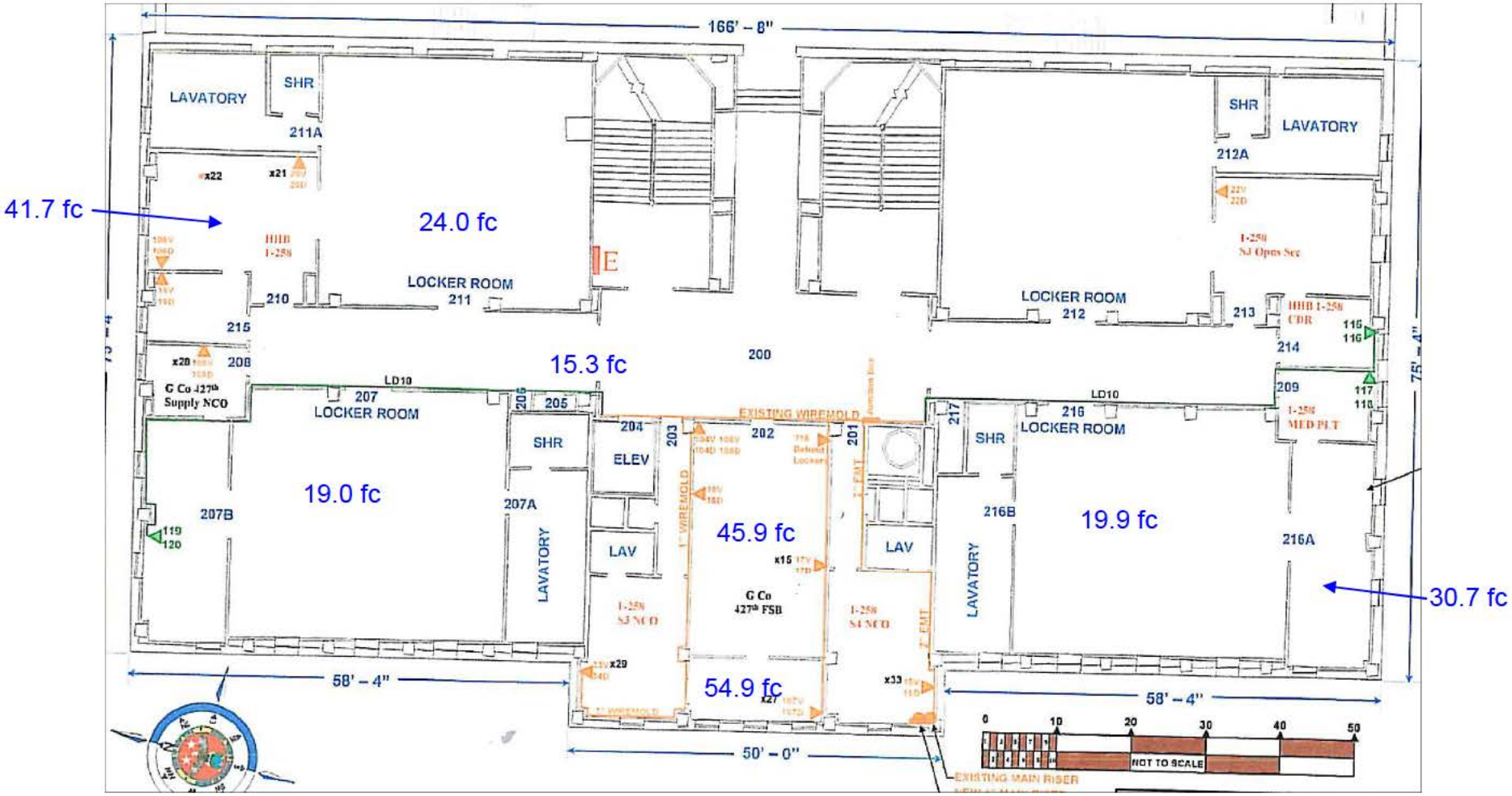


Lighting measurement taken in foot candles (fc)

READINESS CENTER
93-05 168TH STREET
JAMAICA, NEW YORK 11433
1st Floor

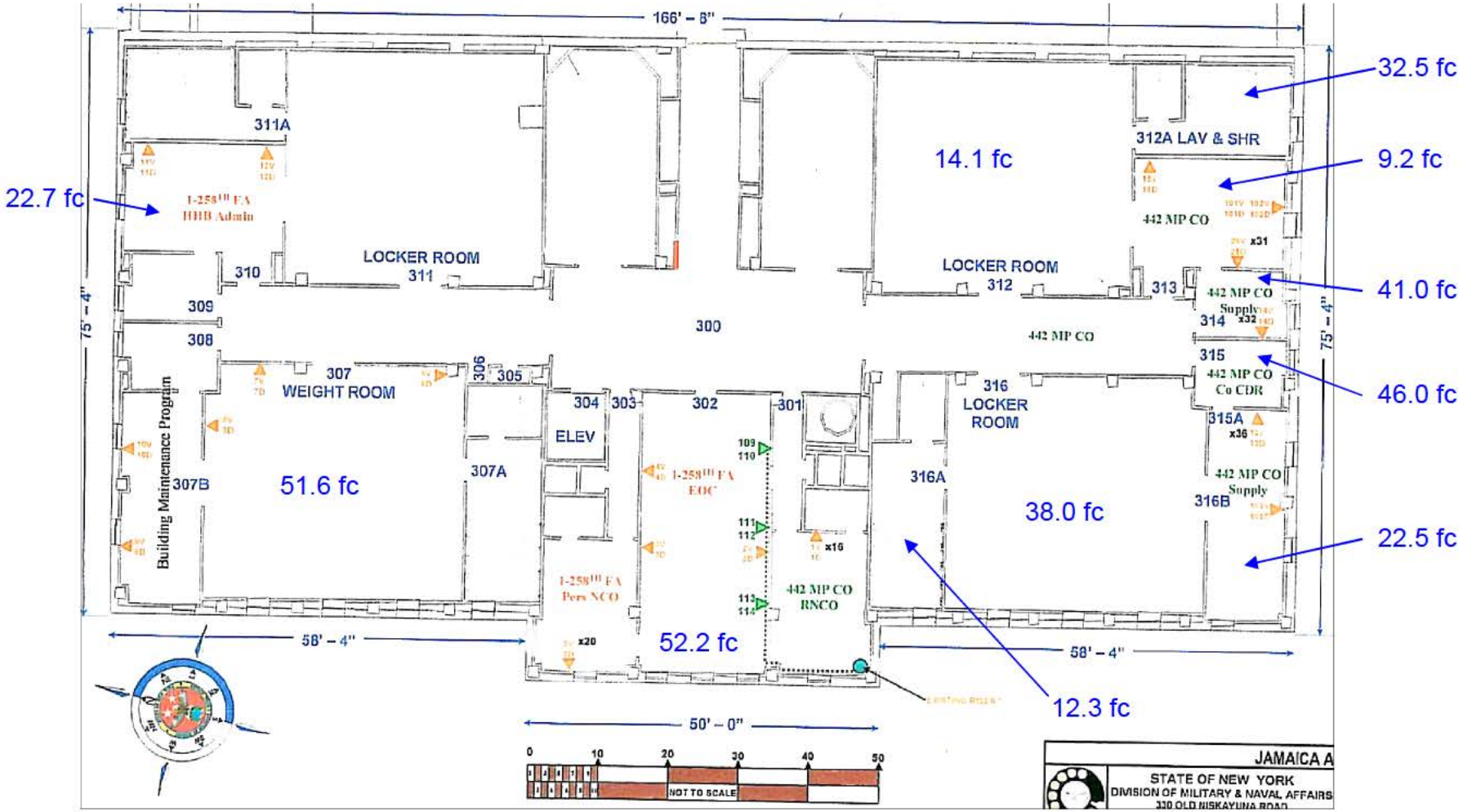
Lighting measurement taken in foot candles (fc)

READINESS CENTER
93-05 168TH STREET
JAMAICA, NEW YORK 11433
2nd Floor



Lighting measurement taken in foot candles (fc)

READINESS CENTER
93-05 168TH STREET
JAMAICA, NEW YORK 11433
3rd Floor



Lighting measurement taken in foot candles (fc)

APPENDIX II

PHOTOGRAPHS

Industrial Hygiene Survey
Readiness Center
Jamaica, New York
ECS Project No. 14-4876

Photo 1: Out of date fire extinguisher inspection record.

Photo 2: Standing water in basement.

APPENDIX III

ASBESTOS BULK SAMPLE RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	National Guard Armory	**Chain Of Custody:**	159403
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Jamaica, NY	**Date Analyzed:**	8/1/2008
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	Non-Responsive
		P.O. Number:	Not Provided		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0873430	7A	NAD	--	--	--	--	--	--	80	--	--	20	Brown	Homogeneous	LBP	
0873431	7B	NAD	--	--	--	--	--	--	80	--	--	20	Brown	Homogeneous	LBP	
0873432	8A	40	40	--	--	--	--	--	20	--	--	40	Off-White	Homogeneous	LBP	
0873433	8B	31	30	TR	--	--	--	--	20	--	--	50	Off-White	Homogeneous	LBP	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

Non-Responsive

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AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159403

Mailing/Billing Information:
1. Client Name: National Guard Northern [illegible]
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: Fax #:

Submittal Information:
1. Job Name: NAtional Guard Armory
2. Job Location: Jamaica NY
3. Job #: 14-4071 P.O. #:
4. Contact Person: [redacted] 516-444-9360
5. Submitted by: [redacted] Signature [redacted]

☒ Please include COC/field data sheets with results

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: 8/4/08 @ 1700 ☐Immd. ☐24hr ☐48hr ☐72hr ☒5 Day + ☐Immd. After-Hours* ☐24hr After-Hours* ☐Late Night* (*must be pre-scheduled)
☐ Verbals: ______ @ cell # ______ ☐ Fax Copy: ______ @ fax # ______ ☐ Email Copy [redacted] ecslimited.com

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
☐ NIOSH 7400 ______ (QTY)
☐ Fiberglass ______ (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
☐ AHERA ______ (QTY)
☐ NIOSH 7402 ______ (QTY)
☐ Other (specify ______) ______ (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 4 (QTY)
☐ EPA Point Count ______ (QTY)
☐ NY State Friable 198.1 ______ (QTY)
☐ Grav. Reduction ELAP 198.6 ______ (QTY)
☐ Other (specify ______) ______ (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield ______ (QTY)
☐ NY State PLM/TEM ______ (QTY)
☐ Residual Ash ______ (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust ______ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ______ (QTY)
☐ Quan. (s/area)Dust D6480-99 ______ (QTY)
TEM Water
☐ Qual. (pres/abs) ______ (QTY)
☐ ELAP 198.2/EPA 100.2 ______ (QTY)
☐ EPA 100.1 ______ (QTY)

☐ All samples received in good condition unless otherwise noted.
(TEM Water samples ______ °C)

Lead Analysis
☒ Paint Chip 3 (QTY)
☒ Dust Wipe (wipe type GSA/[illegible]) 3 (QTY)
☒ Air 3 (QTY)
☐ Soil/Solid ______ (QTY)
☐ TCLP ______ (QTY)
☐ Drinking Water ______ (QTY)
☐ Waste Water ______ (QTY)
☐ Dust Wipe Furnace (wipe type ______) ______ (QTY)

Mold - Direct Microscopic Analysis
☐ Spore-Trap ______ (QTY) ☐ Bulk ______ (QTY)
☐ Surface Swab ______ (QTY) ☐ Surface Vacuum Dust ______ (QTY)
☐ Surface Tape ______ (QTY) ☐ Other (Specify ______) ______ (QTY)

SAMPLE INFORMATION / ANALYSIS / MATRIX

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
1A	1st Lt Brandon	7/16	694					X		X						
2A	Lt Col Conte	7/16	570					X		X						
3A	BlAnK	7/16	–					X		X						
4A	Green paint going down	7/16		Stairs to Boiler Rm				X			X					
5A	white stairwell	7/16		Stairs to Boiler				X			X					
6A	Subbasement pump Rm	7/16		pump Rm				X			X					
7A	Pipe Ins. Boiler Rm	7/16		Boiler			X				X					
7B	Pipe Ins. Boiler	7/16		Boiler			X				X					
8A	Subbasement old Boiler	7/16		old Boiler			X				X					
8B	Subbasement old Boiler	7/16		old Boiler			X				X					
1	left Arm Rmg	7/16		left Arm Rmg				X				X				
2	Rt Arm Rmg	7/16		Rt Arm Rmg				X				X				
3	Subbasement Fire	7/16		pump Rm				X				X				

CLIENT CONTACT (LABORATORY STAFF ONLY)
Date/Time: ______ Contact: ______ By: ______
Date/Time: ______ Contact: ______ By: ______
Date/Time: ______ Contact: ______ By: ______

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 7/28/08 @ 1020 Via: FedEx By (Print) [redacted]
2. Date/Time Analyzed: 8/4/08 @ BD By (Print): LOM
3. Results Reported To: [redacted] Via: Email Date: 8/4/08 Time:
4. Comments:

BEST AVAILABLE

APPENDIX IV

LEAD WIPE RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory	**Chain Of Custody:**	159403		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Jamaica, NY	**Date Submitted:**	7/28/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	[redacted]		
		P.O. Number:	Not Provided	**Date Analyzed:**	8/1/2008	**Report Date:**	8/1/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0873387	1A	Flame	Air	694	N/A	4.32	ug/m³	< 4.3	ug/m³	
0873388	2A	Flame	Air	570	N/A	5.26	ug/m³	< 5.3	ug/m³	
0873389	3A	Flame	Air Blank	0	N/A	3.00	ug/m³	< 3	ug	
0873390	4A	Flame	Paint Chip	****	N/A	0.01	%Pb	11	%Pb	
0873391	5A	Flame	Paint Chip	****	N/A	0.01	%Pb	0.53	%Pb	
0873392	6A	Flame	Paint Chip	****	N/A	0.01	%Pb	0.13	%Pb	
0873393	1	Flame	Wipe	****	0.108	111.52	ug/ft²	2900	ug/ft²	
0873394	2	Flame	Wipe	****	0.108	111.52	ug/ft²	7900	ug/ft²	
0873395	3	Flame	Wipe	****	0.108	111.52	ug/ft²	1500	ug/ft²	
0873396	4	Flame	Wipe	****	0.108	111.52	ug/ft²	15000	ug/ft²	
0873397	5	Flame	Wipe	****	0.108	111.52	ug/ft²	7900	ug/ft²	
0873398	6	Flame	Wipe	****	0.108	111.52	ug/ft²	2400	ug/ft²	
0873399	7	Flame	Wipe	****	0.108	111.52	ug/ft²	4100	ug/ft²	
0873400	8	Flame	Wipe	****	0.108	111.52	ug/ft²	220	ug/ft²	
0873401	9	Flame	Wipe	****	0.108	111.52	ug/ft²	58000	ug/ft²	
0873402	10	Flame	Wipe	****	0.108	111.52	ug/ft²	18000	ug/ft²	
0873403	11	Flame	Wipe	****	0.108	111.52	ug/ft²	6600	ug/ft²	
0873404	12	Flame	Wipe	****	0.108	111.52	ug/ft²	2900	ug/ft²	
0873405	13	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory	**Chain Of Custody:**	159403
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Jamaica, NY	**Date Submitted:**	7/28/2008
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	8/1/2008 **Report Date:** 8/1/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0873406	14	Flame	Wipe	****	0.108	111.52	ug/ft²	1900	ug/ft²	
0873407	15	Flame	Wipe	****	0.108	111.52	ug/ft²	8200	ug/ft²	
0873408	16	Flame	Wipe	****	0.108	111.52	ug/ft²	3800	ug/ft²	
0873409	17	Flame	Wipe	****	0.108	111.52	ug/ft²	3300	ug/ft²	
0873410	18	Flame	Wipe	****	0.108	111.52	ug/ft²	3200	ug/ft²	
0873411	19	Flame	Wipe	****	0.108	111.52	ug/ft²	540	ug/ft²	
0873412	20	Flame	Wipe	****	0.108	111.52	ug/ft²	1100	ug/ft²	
0873413	21	Flame	Wipe	****	0.108	111.52	ug/ft²	20000	ug/ft²	
0873414	22	Flame	Wipe	****	0.108	111.52	ug/ft²	24000	ug/ft²	
0873415	23	Flame	Wipe	****	0.108	111.52	ug/ft²	2100	ug/ft²	
0873416	24	Flame	Wipe	****	0.108	111.52	ug/ft²	2300	ug/ft²	
0873417	25	Flame	Wipe	****	0.108	111.52	ug/ft²	31000	ug/ft²	
0873418	26	Flame	Wipe	****	0.108	111.52	ug/ft²	7400	ug/ft²	
0873419	27	Flame	Wipe	****	0.108	111.52	ug/ft²	4000	ug/ft²	
0873420	28	Flame	Wipe	****	0.108	111.52	ug/ft²	7500	ug/ft²	
0873421	29	Flame	Wipe	****	0.108	111.52	ug/ft²	3400	ug/ft²	
0873422	30	Flame	Wipe	****	0.108	111.52	ug/ft²	460	ug/ft²	
0873423	31	Flame	Wipe	****	0.108	111.52	ug/ft²	220000	ug/ft²	
0873424	32	Flame	Wipe	****	0.108	111.52	ug/ft²	2400	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory	**Chain Of Custody:**	159403		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Jamaica, NY	**Date Submitted:**	7/28/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	8/1/2008	**Report Date:**	8/1/2008
Attention:	Non-Responsive						

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0873425	33	Flame	Wipe	****	0.108	111.52	ug/ft²	150	ug/ft²	
0873426	34	Flame	Wipe	****	0.108	111.52	ug/ft²	1000	ug/ft²	
0873427	35	Flame	Wipe	****	0.108	111.52	ug/ft²	1400	ug/ft²	
0873428	36	Flame	Wipe	****	0.108	111.52	ug/ft²	7200	ug/ft²	
0873429	37	Flame	Wipe	****	0.108	111.52	ug/ft²	4000	ug/ft²	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.

NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analyst: Non-Responsive

Technical Manager: Non-Responsive

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159403

Mailing/Billing Information:
1. Client Name: National Guard Northern Unit
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: Fax #:

Submittal Information:
1. Job Name: National Guard Armory
2. Job Location: Jamaica
3. Job #: 14-4876 P.O. #:
4. Contact Person: [redacted] @ phone # 864-444-9360
5. Submitted by: [redacted] Signature: [redacted]

☒ Please include COC/field data sheets with results.

Reporting Information (Results will be provided as soon as technically feasible).
Date & Time Results Required: 2/4/08 @ 1700 ☐Immd. ☐24hr ☐48hr ☐72hr ☒5 Day + ☐Immd. After-Hours* ☐24hr After Hours* ☐Late Night* (*must be pre-scheduled)
❑ Verbals: _____ @ cell # _____ ❑ Fax Copy: _____ @ fax # _____ ❑ Email Copy [redacted] @ ecslimited.com

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ NIOSH 7400_____(QTY)
❑ Fiberglass _____(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ AHERA _____(QTY)
❑ NIOSH 7402 _____(QTY)
❑ Other (specify_____)_____(QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 4 (QTY)
❑ EPA Point Count _____(QTY)
❑ NY State Friable 198.1 _____(QTY)
❑ Grav. Reduction ELAP 198.6 _____(QTY)
❑ Other (specify_____)_____(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield _____(QTY)
❑ NY State PLM/TEM _____(QTY)
❑ Residual Ash _____(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust _____(QTY)
❑ Quan. (s/area) Vacuum D5755-95 _____(QTY)
❑ Quan. (s/area)Dust D6480-99 _____(QTY)
TEM Water
❑ Qual. (pres/abs)_____(QTY)
❑ ELAP 198.2/EPA 100.2 _____(QTY)
❑ EPA 100.1 _____(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____°C)

Lead Analysis
☒ Paint Chip 3 (QTY)
☒ Dust Wipe (wipe type OSHA) 37 (QTY) 37
☒ Air 3 (QTY)
❑ Soil/Solid _____(QTY)
❑ TCLP _____(QTY)
❑ Drinking Water _____(QTY)
❑ Waste Water _____(QTY)
❑ Dust Wipe Furnace (wipe type _____)_____(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap _____(QTY) ❑ Bulk _____(QTY)
❑ Surface Swab _____(QTY) ❑ Surface Vacuum Dust _____(QTY)
❑ Surface Tape _____(QTY) ❑ Other (Specify_____)_____(QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	MATRIX: BULK	DUST	PAINT CHIP AND OTHER	SPORE TRAP	TAPE	SWAB
1A	1st Lt Brandon	7/16	694					X		X						
2A	4th Col Conte	7/16	570					X		X						
3A	BLANK	7/16	—					X		X						
4A	Green Plastic going down	7/16		Stairs to Boiler Rm				X			X					
5A	White Stairwell	7/16		2nd to 3rd Fl				X			X					
6A	Subbasement pump Rm	7/16		Pump Rm				X			X					
7A	Pipe Ins. Boiler Rm	7/16		Boiler Rm			X				X					
7B	Pipe Ins. Boiler Rm	7/16		Boiler Rm			X				X					
8A	Subbasement old Boiler	7/16		old Boiler			X				X					
8B	Subbasement old Boiler	7/16		old Boiler			X				X					
1	left Arm Pump	7/16		left Arm Pump				X				X				
2	Rt Arm/Pump	7/16		Rt Pump				X				X				
3	Subbasement fire	7/16		Pump Rm				X				X				

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: 7/30/08 Contact: RS By: MG
All wipe areas = 100cm²
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 7/28/08 @ 1030 Via: FedEX By (Print): [redacted]
2. Date/Time Analyzed: ___/___/___ @ ___ By (Print): ___ Sign: ___
3. Results Reported To: ___ Via: ___ Date: ___/___/___ Time: ___ Initials: ___
4. Comments: ___

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Jamaica Readiness Center
Jamaica, NY 11433-1234

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 8, 2013

Bonus Environmental, LLC

TABLE OF CONTENTS

APPENDICES

January 8, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Jamaica Readiness Center, Jamaica NY 11433-1234

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Jamaica Readiness Center located at 93-05 168th Street in Jamaica, New York. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on October 23, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Jamaica Readiness Center is an Army National Guard armory comprised of offices, classrooms, locker rooms, storage rooms, a break room, a boiler room, a fitness room, a former indoor firing range, and a drill hall. The point of contact for the approximately 94,095 ft² Jamaica Readiness Center is Mr. Dennis McGlynn. Four hundred forty seven (447) full-time administrative personnel and three (3) maintenance personnel are employed at the Jamaica Readiness Center. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twenty two (22) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Jamaica Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
Jamaica RC-LW-1	10-23-12	Field Blank	---	25 μg
Jamaica RC-LW-2	10-23-12	Drill Hall, on center of drill floor	0.111	380
Jamaica RC-LW-3	10-23-12	Drill Hall, on payphone	0.111	4,700
Jamaica RC-LW-4	10-23-12	Drill Hall, on filing cabinet	0.111	710

Army National Guard – Jamaica Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
Jamaica RC-LW-5	10-23-12	Drill Hall, on electrical panel box	0.111	8,200
Jamaica RC-LW-6	10-23-12	Drill Hall, on chair in Southeast corner	0.111	1,100
Jamaica RC-LW-7	10-23-12	Community Center (Break Room), on top of refrigerator	0.111	920
Jamaica RC-LW-8	10-23-12	Supervisor's Office (101), on toaster oven	0.111	960
Jamaica RC-LW-9	10-23-12	Board Room (110), on bookshelf	0.111	710
Jamaica RC-LW-10	10-23-12	Female Locker Room, on locker #4	0.111	7,900
Jamaica RC-LW-11	10-23-12	Men's Locker Room (211), on locker #70	0.111	930
Jamaica RC-LW-12	10-23-12	Office (201), on top of TV	0.111	630
Jamaica RC-LW-13	10-23-12	Office (213), on filing cabinet	0.111	460
Jamaica RC-LW-14	10-23-12	Men's Locker Room (207), on top of filing cabinet	0.111	4,700
Jamaica RC-LW-15	10-23-12	Office (313), on window sill	0.111	1,800
Jamaica RC-LW-16	10-23-12	Men's Restroom (312A), on paper towel dispenser	0.111	5,500
Jamaica RC-LW-17	10-23-12	Computer Room (316E), on top of paper shredder	0.111	300
Jamaica RC-LW-18	10-23-12	Weight Room (307), on top of TV shelf	0.111	310
Jamaica RC-LW-19	10-23-12	Mechanical Room (5), on corner of work table	0.111	1,600
Jamaica RC-LW-20	10-23-12	Women's Restroom, on top of paper towel dispenser	0.111	8,000
Jamaica RC-LW-21	10-23-12	Former Indoor Firing Range, at bullet trap area #1 (left side)	0.111	3,200
Jamaica RC-LW-22	10-23-12	Former Indoor Firing Range, at bullet trap area #2 (right side)	0.111	3,800
Jamaica RC-	10-23-12	Former Indoor Firing Range, on electrical box	0.111	67,000

Army National Guard – Jamaica Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-23				

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range is currently used for storage. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area. The bullet trap had been removed from the "bullet trap area".

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Jamaica Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified several areas of peeling paint which could potentially pose a lead exposure hazard.

- Approximately 3 ft² of peeling blue paint located within the Storage Room (301)
- Approximately 5 ft² of peeling white paint located within the Copy Room (209)
- Approximately 100 ft² of peeling white paint located within the Men's Locker Room (216)
- Approximately 10 ft² of peeling white paint located within the Former Indoor Firing Range
- Approximately 10 ft² of peeling white paint located within the Fire Pump Room
- Approximately 6 ft² of peeling beige paint located within the Men's Restroom (216B)
- Approximately 30 ft² of peeling beige paint located within the Weight Room (307)
- Approximately 2 ft² of peeling beige paint located within the Men's Restroom (307A)
- Approximately 3 ft² of peeling brown paint located within the Office (214)
- Approximately 3 ft² of peeling grey paint located within the Women's Restroom
- Approximately 25 ft² of peeling grey paint located within the Boiler Room

Five (5) paint chip samples (white, brown, blue, gray, and beige) were collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. Analysis indicated that each of the peeling paints collected contained detectable levels of lead. The paints are therefore considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Jamaica Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if

found, to note their condition. Bonus Environmental, LLC identified approximately 8 ft² of damaged 9"x9" dark brown floor tile located in the Storage Room (301). Bonus Environmental, LLC identified approximately 36 ft² of damaged plaster walls and ceilings within the men's restroom, office (213), cleaning supply area and the former indoor firing range. Bulk samples were collected of these materials and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. Analytical results determined that the 9"x9" dark brown floor contains 3% Chrysotile asbestos and the plaster sample had no asbestos detected. Analytical results of the asbestos bulk samples are attached to this report as Appendix C.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Jamaica Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials or visible mold problems. Bonus Environmental, LLC identified the following areas of water-damaged building materials:

- Approximately 12 ft^2 water-damaged plaster, 2^{nd} floor men's restroom;
- Approximately 10 ft^2 water-damaged plaster, office 213;
- Approximately 8 ft^2 water-damaged plaster, 3^{rd} floor cleaning supply area;
- Approximately 6 ft^2 water-damaged plaster, former indoor firing range.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Jamaica Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Jamaica Readiness Center facility in good order.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Jamaica Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Jamaica Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society

of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 494 ppm to 659 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 5.1 ppm to 5.9 ppm. CO levels were well below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Jamaica Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 69.0ºF to 72.4ºF and are considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Jamaica Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 42.1% to 45.7%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Jamaica Readiness Center *Indoor Air Quality Measurements*				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, North side of Building; (overcast)	516	5.9	43.6	70.1
Supervisor's Office (101); 3 people in room	631	5.8	45.3	71.1
Board Room (110)	494	5.5	43.7	69.0
Men's Locker Room (207)	659	5.5	42.7	71.2
Men's Restroom (216B)	547	5.4	42.1	71.8
Office (215)	628	5.5	43.6	71.7
Men's Locker Room (312)	566	5.4	44.5	71.5
Weight Room (307)	579	5.5	43.4	71.4
Office (315)	599	5.1	42.2	72.4
Mechanical Room (5)	573	5.5	43.4	71.7
Women's Restroom	630	5.6	45.7	71.8

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Jamaica Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Jamaica Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Female Locker Room	50.6	7	Yes
Female Restroom	26.7	5	Yes
Family Readiness Center (112)	39.3	50	No
Recruiting Office	90.1	50	Yes
Office	44.7	50	No
Restroom (115A)	69.8	5	Yes
Community Center (Break Room)	16.6	10	Yes
Board Room (110)	3.9	50	No
Office (109)	Inaccessible		
Office (104)	11.9	50	No
Office (107)	Inaccessible		
Office (106)	Inaccessible		
Supervisor's Office (101)	83.0	50	Yes
Office (210)	38.7	50	No
Copy Room (209)	34.5	10	Yes
Men's Locker Room (207)	14.3	7	Yes
Men's Restroom	26.2	5	Yes
(208)	Inaccessible		

Army National Guard – Jamaica Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Men's Locker Room (211)	15.1	7	Yes
Men's Restroom	33.1	5	Yes
(205)	Inaccessible		
(206)	Inaccessible		
Office (203)	Inaccessible		
Office (202)	74.6	50	Yes
Office (201)	76.6	50	Yes
Restroom	47.5	5	Yes
Men's Locker Room (216)	15.8	7	Yes
Men's Restroom (216B)	12.3	5	Yes
Office (213)	34.4	50	No
Office (214)	45.1	50	No
Office (215)	58.4	50	Yes
Men's Locker Room (212)	Inaccessible		
Men's Locker Room (312)	16.2	7	Yes
Office (313)	20.1	50	No
Office (314)	Inaccessible		
Men's Restroom (312A)	42.9	5	Yes
Locker Room (316)	34.3	7	Yes
Computer Room (316E)	54.0	30	Yes
Office (315)	78.3	50	Yes
Storage (301)	83.9	30	Yes
Restroom (301A)	27.6	5	Yes
(302)	Inaccessible		
(303)	Inaccessible		
Weight Room (307)	35.0	30	Yes
Men's Restroom (307A)	25.2	5	Yes
Office (310)	Inaccessible		
(309)	Inaccessible		
(308)	Inaccessible		
(9)	Inaccessible		
Mechanical Room (5)	70.2	30	Yes
Women's Restroom	45.1	5	Yes
Cleaning Supply Area	41.6	30	Yes
Men's Restroom	29.1	5	Yes
Boiler Room	4.3	30	No
Aptitude Testing Room (6)	12.7	30	No
Former Indoor Firing Range (storage)	4.6	30	No
Fire Pump Room	11.5	30	No
Paint Room Storage	6.4	30	No
Storage	13.6	30	No
Drill Hall	27.3	30	No
Lobby	26.8	10	Yes
Office (102)	81.7	50	Yes

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Jamaica Readiness Center located at 93-05 168th Street in Jamaica, New York. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on October 23, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Jamaica Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15.

2. Bonus Environmental, LLC identified several areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC identified approximately 8 ft² damaged asbestos 9"x9" dark brown floor tile.

4. Bonus Environmental, LLC identified approximately 36 ft² of water-damaged plaster walls and ceiling in the men's restroom, the office (213), cleaning supply area and in the former indoor firing range.

5. Bonus Environmental, LLC found the housekeeping practices within Jamaica Readiness Center in good order.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Jamaica Readiness Center. All were found to be below or within their acceptable ranges/limits.

8. Areas within the Jamaica Readiness Center facility were identified as improperly illuminated.

9. No Health and Safety policies existed for Bonus Environmental, LLC to review at the Jamaica Readiness Center.

10. No hazardous materials inventory lists available at the Jamaica Readiness Center.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

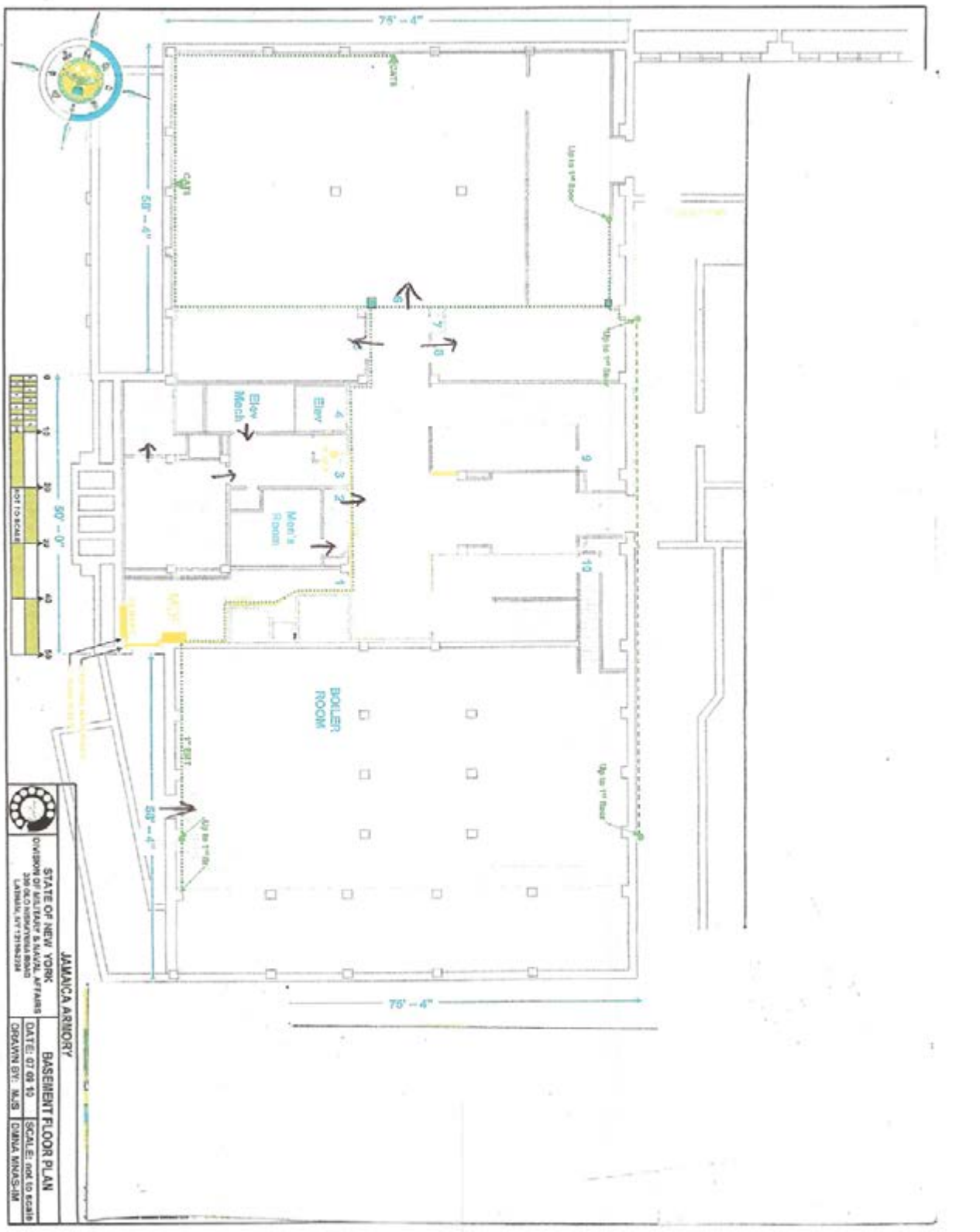
Sincerely,

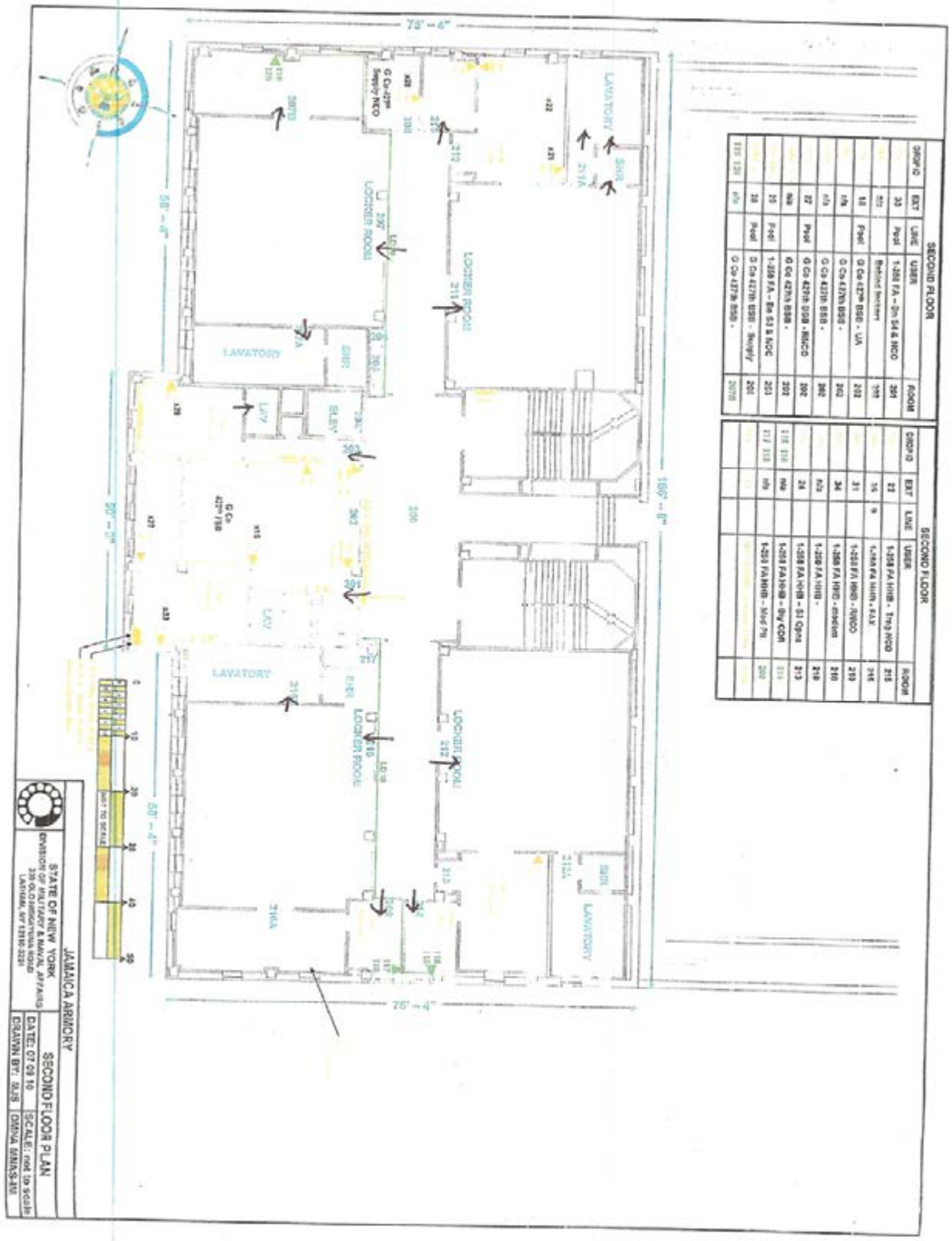
Non-Responsive

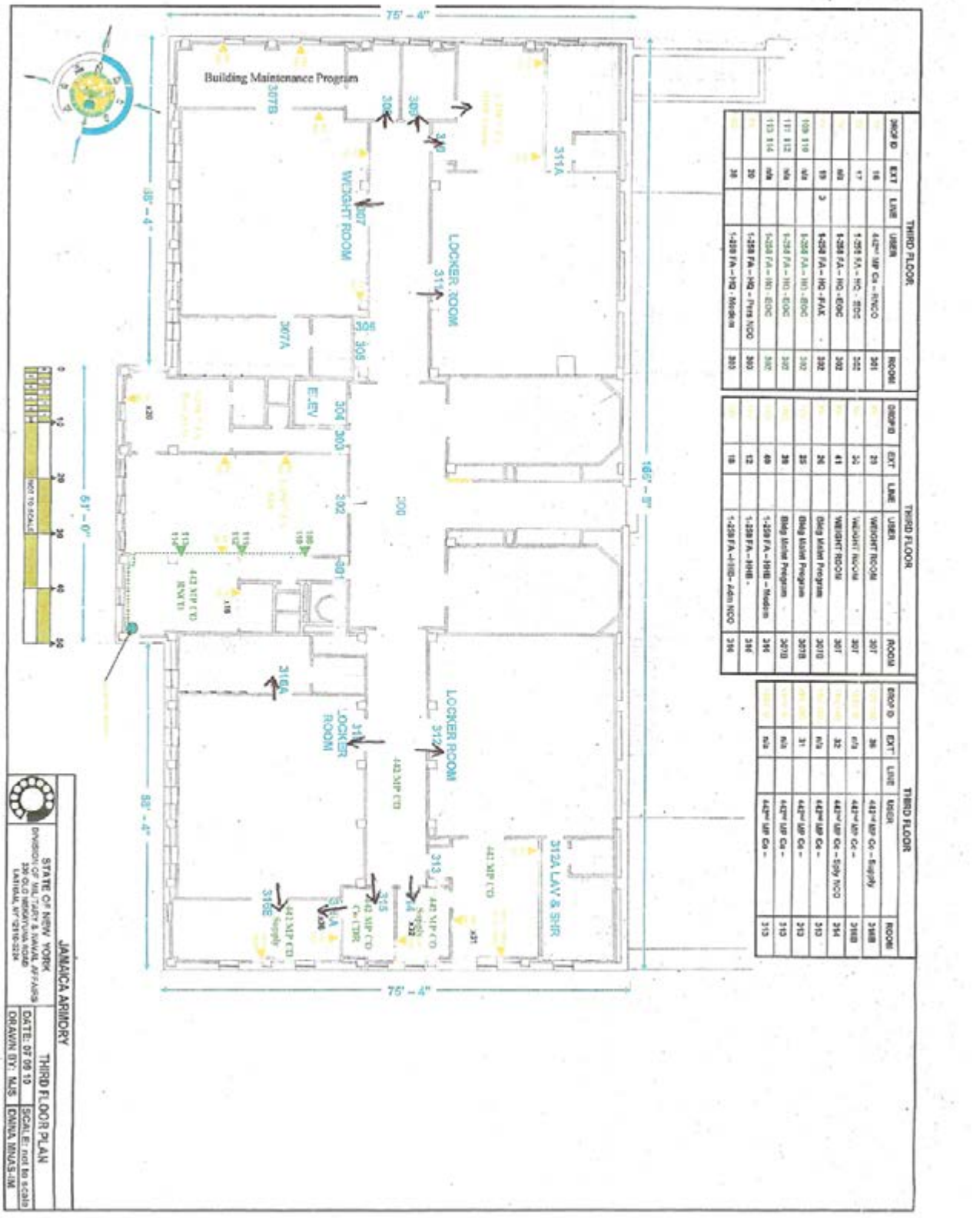
Principal
Bonus Environmental, LLC

Appendix A

Shop Diagram and Air Flow Patterns


75' - 4"
58' - 4"
50' - 0"
Elev Mech
Elev
Men's Room
BOILER ROOM
STATE OF NEW YORK
DIVISION OF MILITARY & NAVAL AFFAIRS
330 OLD NISKAYUNA ROAD
LATHAM, NY 12110-2224
JAMAICA ARMORY
BASEMENT FLOOR PLAN
DATE: 07 08 12
DRAWN BY: M.S
SCALE: not to scale
DMNA MNAS-IM






93rd Avenue
168th Street
SUPERINTENDENT
JAMAICA ARMORY
STATE OF NEW YORK
FIRST FLOOR PLAN

Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Jamaica RC	**Chain Of Custody:**	514391
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	93 05 168th Street, Jamaica, NY	**Date Submitted:**	11/2/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/7/2012 **Report Date:** 11/12/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13011010	JamaicaRC-PC-1	Flame	Paint Chip	****	N/A	0.0092	%Pb		35	%Pb	
13011011	JamaicaRC-PC-2	Flame	Paint Chip	****	N/A	0.0071	%Pb		2.9	%Pb	
13011012	JamaicaRC-PC-3	Flame	Paint Chip	****	N/A	0.0055	%Pb		11	%Pb	
13011013	JamaicaRC-PC-4	Flame	Paint Chip	****	N/A	0.0073	%Pb		20	%Pb	
13011014	JamaicaRC-PC-5	Flame	Paint Chip	****	N/A	0.0071	%Pb		37	%Pb	
13011015	JamaicaRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		25	ug	
13011016	JamaicaRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	42	380	ug/ft²	
13011017	JamaicaRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	520	4700	ug/ft²	
13011018	JamaicaRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	78	710	ug/ft²	
13011019	JamaicaRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	910	8200	ug/ft²	
13011020	JamaicaRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	120	1100	ug/ft²	
13011021	JamaicaRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	100	920	ug/ft²	
13011022	JamaicaRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	110	960	ug/ft²	
13011023	JamaicaRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	79	710	ug/ft²	
13011024	JamaicaRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	880	7900	ug/ft²	
13011025	JamaicaRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	100	930	ug/ft²	
13011026	JamaicaRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	70	630	ug/ft²	
13011027	JamaicaRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	51	460	ug/ft²	
13011028	JamaicaRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	520	4700	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
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LAB #100470

Client:	National Guard Bureau	**Job Name:**	Jamaica RC	**Chain Of Custody:**	514391
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	93 05 168th Street, Jamaica, NY	**Date Submitted:**	11/2/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/7/2012 **Report Date:** 11/12/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13011029	JamaicaRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	200	1800	ug/ft²	
13011030	JamaicaRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	610	5500	ug/ft²	
13011031	JamaicaRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	33	300	ug/ft²	
13011032	JamaicaRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	35	310	ug/ft²	
13011033	JamaicaRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft²	180	1600	ug/ft²	
13011034	JamaicaRC-LW-20	Flame	Wipe	****	0.111	110	ug/ft²	890	8000	ug/ft²	
13011035	JamaicaRC-LW-21	Flame	Wipe	****	0.111	110	ug/ft²	360	3200	ug/ft²	
13011036	JamaicaRC-LW-22	Flame	Wipe	****	0.111	110	ug/ft²	420	3800	ug/ft²	
13011037	JamaicaRC-LW-23	Flame	Wipe	****	0.111	110	ug/ft²	7500	67000	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Jamaica RC	**Chain Of Custody:**	514391
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	93 05 168th Street, Jamaica, NY	**Date Submitted:**	11/2/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/7/2012 **Report Date:** 11/12/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)
%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Non-Responsive

Analy

Non-Responsive

Technical M

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMR Analytical Services, Inc.
Focused on Results www.amralab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514391

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Jamaica RC
2. Job Location: 93-05 168th St, Jamaica NY
3. Job #: 1061-15 PO #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone #
5. Submitted by: Non-Responsive ature:

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Incl Non-Responsive ith Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day + ☐ Results Required By Noon	☒ Email bonusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/9/12	☒ Fax: us.army.mil
		☒ Verba us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 2 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Metals Analysis

☒ Pb Paint Chip 5 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 23 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media:
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
Jamaica-RC-ASB-1	Storage Rm 301	10-23				*				*						Date/Time: Contact: By:
Jamaica-RC-ASB-2	Cleaning Supply Area	↓				*				*						
Jamaica RC-LW-1 → LW-23		↓					*				*					
SEE ATTACHED FIELD DATA SHEETS																
Jamaica RC-PC-1 → PC-5		10-23					*			*						Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 10/2/12 @ Via: FedEx By (Print):
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 7989 9087 0059

Surface Sampling Field Data Sheet

Date Collected: 10-23-17
Job Number: 1061-15
Contact Person: Non-Responsive

Job Name: Jamaica RC
Job Location:
Address: 93-05 168th St, Jamaica NY

Page __ of __
Company: Bonus Environmental, LLC
Phone Number: 989-779-7696
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Jamaica RC-LW-1	Field Blank	—	—	Ghost Wipe
Jamaica RC-LW-2	Drill Hall	On Center of Drill Floor	4" x 4"	
Jamaica RC-LW-3	Drill Hall	On Payphone		
Jamaica RC-LW-4	Drill Hall	On Filing Cabinet		
Jamaica RC-LW-5	Drill Hall	On electrical Panel Box		
Jamaica RC-LW-6	Drill Hall	On chair in SE Corner		
Jamaica RC-LW-7	Community Center (Break Room)	on top of Refrigerator		
Jamaica RC-LW-8	Supv. Office (101)	On Toaster Oven		
Jamaica RC-LW-9	Board Room (110)	On Bookshelf		
Jamaica RC-LW-10	Female Locker Rm	On locker # 4		
Jamaica RC-LW-11	Mens Locker Rm (211)	On Locker # 70		
Jamaica RC-LW-12	Office (201)	On top of TV		
Jamaica RC-LW-13	Office (213)	On Filing Cabinet	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

2 of 2

Surface Sampling Field Data Sheet

Date Collected: 10-21-12
Job Number: 1061-15
Contact Person: Non-Responsive

Job Name: Jamaica RC
Job Location:
Address: 93-05 168th St, Jamaica NY

Page __ of __
Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Jamaica RC-LW-14	Men's Locker Rm (207)	On top of filing cabinet	4" x 4"	Ghost Wipe
Jamaica RC-LW-15	Office (313)	On window sill		
Jamaica RC-LW-16	Men's RR (312A)	On Paper Towel Dispenser		
Jamaica RC-LW-17	Computer Rm (316E)	On top of Paper Shredder		
Jamaica RC-LW-18	Weight Rm (307)	On top of TV shelf		
Jamaica RC-LW-19	Mechanical Rm (5)	on corner of work table		
Jamaica RC-LW-20	Women's RR	On top of Paper Towel Dispenser		
Jamaica RC-LW-21	Former Indoor Firing Range	At Bullet trap #1 (Left Side)		
Jamaica RC-LW-22	Former Indoor Firing Range	At Bullet Trap #2 (Right Side)		
Jamaica RC-LW-23	Former Indoor Firing Range	On electrical box		

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Appendix C

Asbestos Bulk Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	Job Name:	Jamaica RC	Chain Of Custody:	514391
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	93 05 168th Street, Jamaica, NY	Date Analyzed:	11/7/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13011038	JamaicaRC-Asb-1	3	3	--	--	--	--	--	--	--	--	97	FT	Dk.Brown	Homogeneous	SW	
13011039	JamaicaRC-Asb-2	NAD	--	--	--	--	--	--	--	--	--	100	PL	Off-White	Homogeneous	SW	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director Non-Responsive

Analys Non-Responsive

NVLAP (101143-0) Accredited Laboratory

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Bulk Sampling Survey Sheet

Page ___ of ___

Date Collected: 10-23-12 | Job Name: Jamaica RC | Company: Bonus Environmental, LLC

Job Number: 1041-15 | Job Location: ______ | Phone Number: 989-779-7686

Contact Person: Non-Responsive [redacted] | Address: 93-05 168th St, Jamaica NY | Collected By: Non-Responsive [redacted]

COC Number: ______

Sample Number	Homogenous Area ID	Type of Material	Sample Location	Friable	Condition of Material	Accessibility	Photo	Comments
Jamaica RC-ASB-1	MISC	Floor Tile	Storage Rm 301	☐ Yes ☒ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☒ Yes ☐ No	
Jamaica RC-ASB-2	SURF	Plaster	Cleaning Supply Area	☒ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☒ Low ☐ Medium ☐ High	☒ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514391

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Jamaica RC
2. Job Location: 93-05 168th St, Jamaica NY
3. Job #: 10/1/15 P.O.#: W912K6-09-A-0003
4. Contact Perso[redacted] @ phone #
5. Submitted by: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Inc[redacted] ith Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day + ☐ Results Required By Noon	☒ Em[redacted] bonusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/9/15	☒ Fax[redacted] us.army.mil
		☒ Ve[redacted] us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 2 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 1002 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis
☒ Pb Paint Chip 5 (QTY)
☒ *Pb Dust Wipes (wipe type Ghost) 23 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cr (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER AND OTHERS	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
Jamaica-RC-ASB-1	Storage Rm 301	10-23				*				*						Date/Time: Contact: By:
Jamaica-RC-ASB-2	Cleaning Supply Area	↓				*				*						
Jamaica RC-LW-1 → LW-23		↓					*				*					
SEE ATTACHED FIELD DATA SHEETS																
Jamaica RC-PC- → PC-5		10-23					*			*						Date/Time: Contact: By:
																Date/Time: Contact: By:

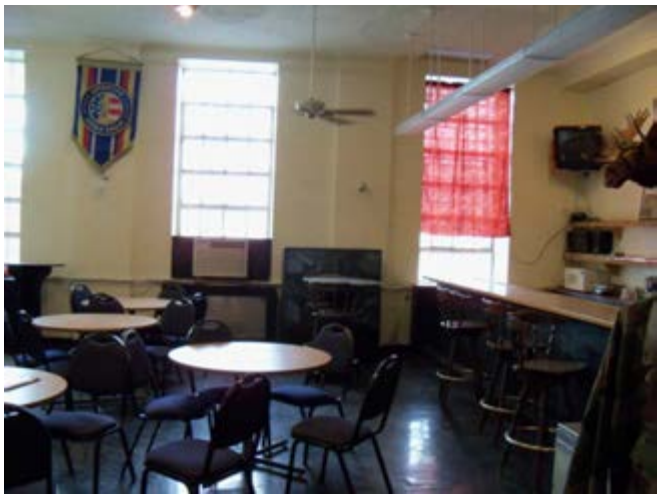
[redacted]

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 10/2/15 @ Via: By (P[redacted]
2. Date/Time Analy[redacted]
3. Results Report[redacted] Date: 11/9/15 Time: Initials: EW
4. Comments: [redacted]

Appendix D

Photographs



Break Room

Room 216, peeling white paint

Room 216B, peeling beige paint

Room 301, damaged 9”x(“ floor tile

Room 301, peeling blue paint

Former indoor firing range

Cleaning supply area, damaged plaster ceiling

Boiler room

Drill hall, looking east

Lobby, looking south

Building exterior, looking SE

Appendix E

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Kingston Readiness Center
Kingston, NY. 12401

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 18, 2013

Bonus Environmental, LLC

TABLE OF CONTENTS

APPENDICES

January 18, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Kingston, NY Readiness Center

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Kingston Readiness Center located at 25 Kiersted Avenue in Kingston, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. No Health & Safety plans were available at Kingston Readiness Center for review. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 2, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Kingston Readiness Center is an Army National Guard armory comprised of offices, locker rooms, storage rooms, supply rooms, conference rooms, a gym, a Drill hall, a boiler room, mechanical/electrical rooms, a break room, a lounge, classrooms, a fitness room, and a former indoor firing range. The point of contact for the approximately 88,074 ft² Kingston Readiness Center is Ms. Joann Ferrara. Approximately thirty (30) full-time administrative personnel are employed at the Kingston Readiness Center. A shop diagram depicting the locations of the operations identified during this industrial hygiene evaluation, as well as airflow patterns, is provided as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twenty two (22) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project

Army National Guard – Kingston Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
KingstonRC-LW-1	11-2-12	Field Blank	---	< 12 μg
KingstonRC-LW-2	11-2-12	Drill hall, northwest end, on floor	0.111	1,400
KingstonRC-LW-3	11-2-12	Drill hall, northeast end, on floor	0.111	1,100
KingstonRC-LW-4	11-2-12	Drill hall, northeast corner, on conduit	0.111	1,700
KingstonRC-LW-5	11-2-12	Drill hall, northeast wall, top of locker	0.111	3,400
KingstonRC-LW-6	11-2-12	Drill hall, northwest corner, top of gray wood ledge	0.111	15,000
KingstonRC-LW-7	11-2-12	Classroom 012, center of room, surface of desk	0.111	170
KingstonRC-LW-8	11-2-12	Boiler room, top of blue tank	0.111	2,400
KingstonRC-LW-9	11-2-12	Room 024, on exhaust fan fin	0.111	4,700
KingstonRC-LW-10	11-2-12	Room 021, top of locker 56	0.111	4,400
KingstonRC-LW-11	11-2-12	Room 038A (former indoor firing range), northeast end, on floor	0.111	320
KingstonRC-	11-2-12	Room 038A (former indoor firing range), center, on light	0.111	1,000

Army National Guard – Kingston Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-12		fixture		
KingstonRC-LW-13	11-2-12	Room 038A (former indoor firing range), southwest end, on floor	0.111	3,300
KingstonRC-LW-14	11-2-12	Room 134, top of copy machine	0.111	< 110
KingstonRC-LW-15	11-2-12	Room 130, top of vending machine	0.111	< 110
KingstonRC-LW-16	11-2-12	Lobby area, top of display case	0.111	< 110
KingstonRC-LW-17	11-2-12	Room 129, on gym floor	0.111	< 110
KingstonRC-LW-18	11-2-12	Room 118, break room, top of refrigerator	0.111	< 110
KingstonRC-LW-19	11-2-12	Room 109, men's locker room, top of key box 1	0.111	< 110
KingstonRC-LW-20	11-2-12	Room 206, southwest end, on supplied air grill	0.111	< 110
KingstonRC-LW-21	11-2-12	Room 212, on window sill	0.111	< 110
KingstonRC-LW-22	11-2-12	Room 228, on heat register	0.111	190
KingstonRC-LW-23	11-2-12	Classroom 236, on computer desk	0.111	< 110

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range was being used for storage. It was stated to Bonus Environmental, LLC that it had been remediated of residual lead contamination at some point in the past (date or year unknown), and it is uncertain if it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Kingston Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified the following areas of peeling paint which could potentially pose a lead exposure hazard:

- Approximately 10 ft^2 of peeling beige paint in Room 129;
- Approximately 3 ft^2 of peeling white paint corridor 026;

- Approximately 25 ft^2 of peeling white paint in Room 018;
- Approximately 70 ft^2 of peeling gray paint Room 038;
- Approximately 80 ft^2 of peeling yellow paint in Room 022;
- Approximately 3 ft^2 of peeling beige paint in Room 120;
- Approximately 150 ft^2 of peeling green paint in old supply area;
- Approximately 20 ft^2 of peeling gray paint in corridor 210, on skylight pipes;

Five (5) paint chip samples were collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. Analysis indicated that each of the peeling paints collected contained detectable levels of lead. The paints are therefore considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Kingston Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC identified the following PACM's that were considered to be in poor or damaged condition:

- Approximately 5 ft^2 damaged plaster ceiling in Room 018;
- Approximately 6 ft^2 of damaged plaster ceiling in Room 121.

One (1) bulk material sample of ceiling plaster was collected and submitted for analysis. These materials indicated "No Asbestos Detected". Asbestos bulk sample results are attached to this report as Appendix C.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Kingston Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified the following areas of water-damaged building materials:

- Approximately 200 ft^2 of damaged concrete ceiling in basement mechanical room;
- Approximately 5 ft^2 of water-damaged plaster ceiling in Room 018;
- Approximately 400 ft^2 of water-damaged concrete walls in Room 038A;
- Approximately 150 ft^2 of fungal growth on concrete ceiling in storage room 022;
- Approximately 4 ft^2 of stained dropped-ceiling tile (DCT) in corridor 132;
- Approximately 15 ft^2 of water-damaged ceiling in Lounge room 130;
- Approximately 6 ft^2 of water-damaged plaster ceiling in Room 121;
- Approximately 5 ft^2 of stained DCT in Room 206;
- Approximately 1 ft^2 of stained DCT in Room 215;
- Approximately 3 ft^2 of stained DCT in corridor 229.

3.4 - Housekeeping
During the industrial hygiene evaluation of the Kingston Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within the Kingston Readiness Center facility to be in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews
During the industrial hygiene evaluation of the Kingston Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following interviews and observations, no ergonomic or indoor air quality concerns were noted.

3.6 – Indoor Air Quality
During the industrial hygiene evaluation of the Kingston Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 8554 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 372 ppm to 521 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected

during this industrial hygiene evaluation all indicated 0.0 ppm. CO levels were well below the OSHA PEL during this industrial hygiene evaluation.
During the industrial hygiene evaluation of the Kingston Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 55.6ºF to 68.0ºF and are considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Kingston Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 31.1% to 41.0%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Kingston Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, northeast side of building (overcast, breezy)	372	0.0	58.6	50.2
Classroom 012	411	0.0	39.6	65.3
Fitness room 024	435	0.0	38.7	66.0
Men's locker room 109	388	0.0	35.1	67.3
Break room 118	401	0.0	33.9	67.8
Orderly room 134	420	0.0	32.7	67.8
Drill hall (2 bay door open)	379	0.0	37.1	55.6
Office 206 (3 people in room)	507	0.0	37.7	66.2
Copy room 211	521	0.0	41.0	67.1
Library room 230	393	0.0	31.5	67.6
Classroom 236	414	0.0	31.1	68.0

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Kingston Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Kingston Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Room 030	Inaccessible		
Room 029 (storage)	50.2	30	Yes
Room 027	Inaccessible		
Corridor 026	47.7	5	Yes
Room 016	Inaccessible		
Room 014	Inaccessible		
Room 013 (mech. room)	94.6	30	Yes
Room 012 (classroom)	31.7	30	Yes
Room 039 (elec. room)	Inaccessible		
Room 039A (emergency elec. room)	Inaccessible		
Room 004 (vault)	Inaccessible		
Room 001 (Supply)	31.6	30	Yes
Room 002 (office)	104.6	50	Yes
Room 005 (vault)	Inaccessible		
Room 006 (Supply)	Inaccessible		
Room 009 (storage)	Inaccessible		
Room 017 (boiler room)	27.4	30	No
Basement mech room	9.5	30	No
Room 018 (office)	26.9	50	No
Room 038 (storage)	20.2	30	No
Room 038A (storage)	7.8	30	No
Room 021 (locker room)	15.4	7	Yes
Room 023 (storage)	33.0	30	Yes
Room 022 (storage)	19.1	30	No
Room 024 (fitness room)	7.6	30	No
Room 028 (storage)	19.1	30	No
Room 134 (Orderly room)	43.3	50	No
Room 135 (office)	Inaccessible		
Room 141 (office)	Inaccessible		
Room 142 (office)	38.6	50	No
Room 143 (office)	Inaccessible		
Corridor 132	138.8	5	Yes
Room 130 (Lounge)	2.2	10	No
Room 131 (lobby)	52.3	10	Yes
Room 125 (office)	20.2	50	No
Room 123 (conference room)	25.4	30	No
Room 124A (office)	20.6	50	No
Room 124	Inaccessible		
Room 105 (elec room)	54.8	30	Yes
Room 104 (storage)	40.7	30	Yes
Room 103	Inaccessible		
Room 102	Inaccessible		
Room 101	Inaccessible		
Room 108 (men's restroom)	31.3	5	Yes
Room 107 (showers)	43.9	7	Yes
Room 109 (locker room)	23.6	7	Yes
Room 111 (locker room)	30.8	7	Yes

Army National Guard – Kingston Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Room 116 (women's locker room)	29.5	7	Yes
Room 113 (showers)	140.5	7	Yes
Room 114 (restroom)	86.0	5	Yes
Room 118 (break room)	10.8	10	Yes
Room 119 (restroom)	26.4	5	Yes
Room 120 (Janitor's closet)	12.8	30	No
Room 121 (showers)	55.5	7	Yes
Room 129 (Gym)	13.1	30	No
Drill Hall	44.5	30	Yes
Room I	Inaccessible		
Room H (storage)	2.5	30	No
Room G	Inaccessible		
Room F	Inaccessible		
Room E	Inaccessible		
Room D	Inaccessible		
Room C	Inaccessible		
1st floor, old Supply area (storage)	22.3	30	No
Room B	Inaccessible		
Room A	Inaccessible		
Room 239 (restroom)	41.4	5	Yes
Room 238 (restroom)	44.3	5	Yes
Room 232 (classroom)	41.4	30	Yes
Room 230 (library)	59.8	30	Yes
Room 226 (office)	Inaccessible		
Corridor 210	60.0	5	Yes
Room 212 (locker room)	70.7	7	Yes
Room 211 (copy room)	63.3	10	Yes
Room 208 (office)	51.2	50	Yes
Room 208A (office)	93.7	50	Yes
Room 206 (office)	36.9	50	No
Room 206A	Inaccessible		
Room 207B (office)	112.3	50	Yes
Room 205 (conference room)	39.1	30	Yes
Room 205A	Inaccessible		
Room 205B	Inaccessible		
Room 205C	Inaccessible		
Room 205E	Inaccessible		
Room 204 (office)	Inaccessible		
Room 202 (elec room)	Inaccessible		
Room 201	Inaccessible		
Room 215 (office)	43.2	50	No
Room 216 (office)	32.3	50	No
Room 218 (office)	26.1	50	No
Room 221 (office)	26.3	50	No
Room 223 (restroom)	29.2	5	Yes
Room 228 (office)	36.8	50	No
Room 234 (classroom)	37.2	30	Yes

Army National Guard – Kingston Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Room 236 (classroom)	65.8	30	Yes
Room 244	Inaccessible		
Room 242	Inaccessible		
Corridor 229	12.2	5	Yes

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Kingston Readiness Center facility located at 25 Kiersted Avenue in Kingston, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Jeff Walworth on November 2, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Kingston Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15.

2. Bonus Environmental, LLC identified several areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC identified PACM's (that analytical results confirmed to be non-asbestos-containing) that were considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified water-damaged and/or moldy building materials including plaster, dropped-ceiling tiles, and concrete in several locations throughout the facility.

5. Bonus Environmental, LLC found the housekeeping practices within the Kingston Readiness Center to be in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Kingston Readiness Center. All were found to be below or within their acceptable ranges/limits.

8. Areas within the Kingston Readiness Center facility were identified as improperly illuminated.

9. No Health & Safety programs were available for review at the Kingston Readiness Center.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC‘s inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

Non-Responsive

Principal
Bonus Environmental, LLC

Kingston RC_12_Report.docx

Appendix A

Shop Diagram and Air Flow Patterns

KINGSTON ARMORY
SPACE ALLOCATION PLAN

Updated 1 Dec 10

SECOND FLOOR

BASEMENT

LEGEND:

JU: Joint Use

S: State

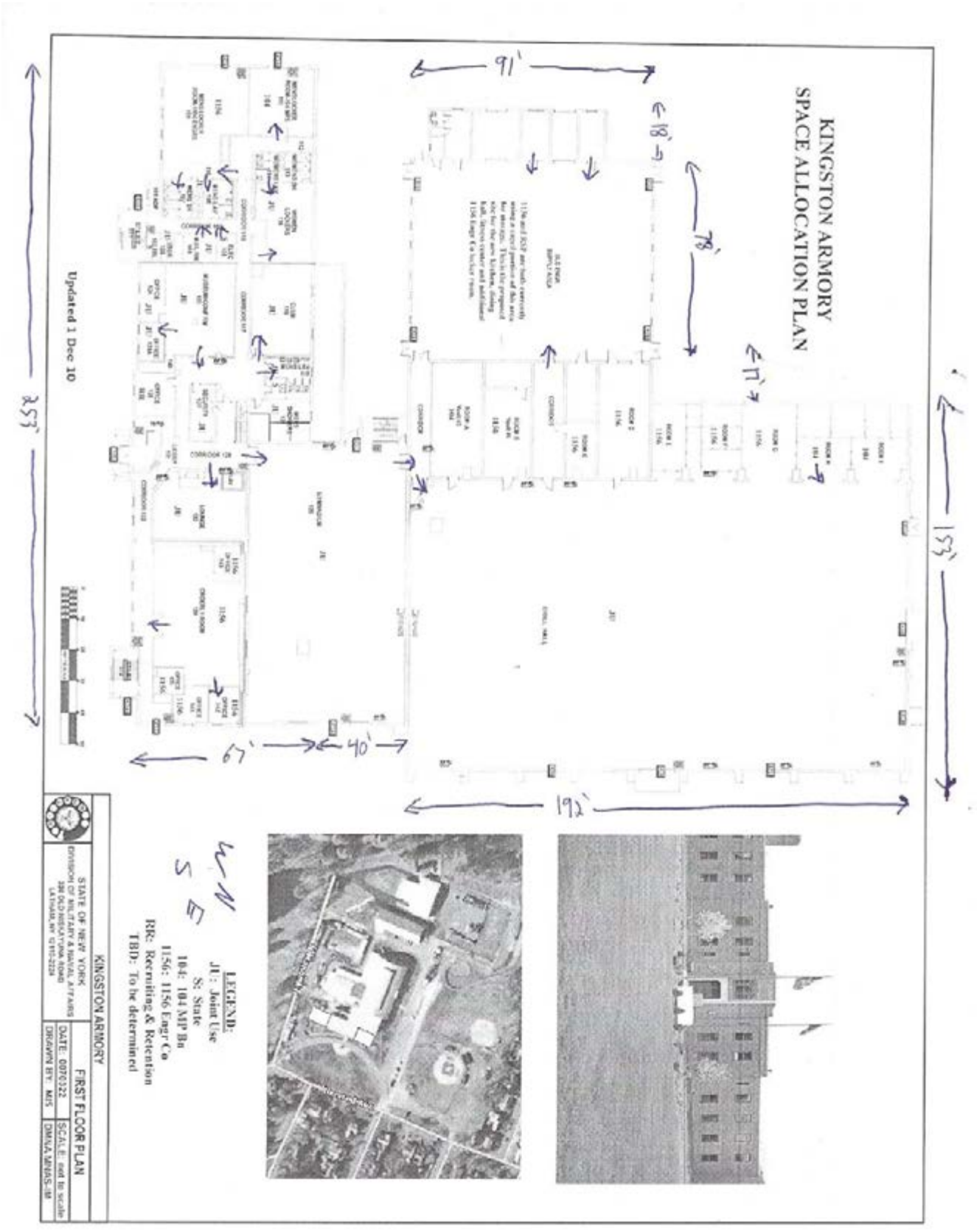
104: 104 MP Bn

1156: 1156 Engr Co

RR: Recruiting & Retention

TBD: To be determined

KINGSTON ARMORY		
STATE OF NEW YORK DIVISION OF MILITARY & NAVAL AFFAIRS FACILITY MANAGEMENT LATHAM, NY 12110-2224	BASEMENT & SECOND FLOOR PLAN	
	DATE: 070322	SCALE: not to scale
	DRAWN BY: MDS	DMNA BNAS-IM



Appendix B

Lead Sample Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Kingston RC	Chain Of Custody:	514427
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	25 Kiersted Avenue, Kingston, NY	Date Submitted:	11/6/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/13/2012 Report Date: 11/14/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13011970	KingstonRC-PC-1	Flame	Paint Chip	****	N/A	0.0085	%Pb		3.6	%Pb	
13011971	KingstonRC-PC-2	Flame	Paint Chip	****	N/A	0.0086	%Pb		3.4	%Pb	
13011972	KingstonRC-PC-3	Flame	Paint Chip	****	N/A	0.0066	%Pb		8.5	%Pb	
13011973	KingstonRC-PC-4	Flame	Paint Chip	****	N/A	0.0096	%Pb		14	%Pb	
13011974	KingstonRC-PC-5	Flame	Paint Chip	****	N/A	0.011	%Pb		2.7	%Pb	
13011975	KingstonRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13011976	KingstonRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	160	1400	ug/ft²	
13011977	KingstonRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	120	1100	ug/ft²	
13011978	KingstonRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	180	1700	ug/ft²	
13011979	KingstonRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	370	3400	ug/ft²	
13011980	KingstonRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	1600	15000	ug/ft²	
13011981	KingstonRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	19	170	ug/ft²	
13011982	KingstonRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	270	2400	ug/ft²	
13011983	KingstonRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	520	4700	ug/ft²	
13011984	KingstonRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	490	4400	ug/ft²	
13011985	KingstonRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	36	320	ug/ft²	
13011986	KingstonRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	110	1000	ug/ft²	
13011987	KingstonRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	370	3300	ug/ft²	
13011988	KingstonRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

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www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Kingston RC	Chain Of Custody:	514427
Address:	301-III Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	25 Kiersted Avenue, Kingston, NY	Date Submitted:	11/6/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/13/2012 Report Date: 11/14/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13011989	KingstonRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011990	KingstonRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011991	KingstonRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011992	KingstonRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011993	KingstonRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011994	KingstonRC-LW-20	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011995	KingstonRC-LW-21	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011996	KingstonRC-LW-22	Flame	Wipe	****	0.111	110	ug/ft²	21	190	ug/ft²	
13011997	KingstonRC-LW-23	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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Client:	National Guard Bureau	**Job Name:**	Kingston RC	**Chain Of Custody:**	514427
Address:	301-HI Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	25 Kiersted Avenue, Kingston, NY	**Date Submitted:**	11/6/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/13/2012 **Report Date:** 11/14/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

An Non-Responsive

Technical Manager: Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.
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AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514427

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Kingston RC
2. Job Location: 25 Kirsted Ave, Kingston, NY
3. Job #: 1061-15 P.O. #: W912K6-09-A-0003
4. Contact Perso[redacted] @ phone #[redacted]
5. Submitted by: [redacted] Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	☒ Inclu[redacted] ith Report
❑ 24 Hours Time Due:	❑ Next Day ☒ 5 Day +	☒ Emai[redacted] bcnusenvironmental.com
Comments:	❑ 2 Day Date Due: 11/13/12	☒ Fax: [redacted] us.army.mil
	❑ Results Required By Noon	☒ Verba[redacted] us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 _____ (QTY)
❑ Fiberglass _____ (QTY)

TEM Air* – Please Indicate Filter Type:
❑ AHERA _____ (QTY)
❑ NIOSH 7402 _____ (QTY)
❑ Other (specify _____) _____ (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
❑ EPA Point Count _____ (QTY)
❑ NY State Friable 198.1 _____ (QTY)
❑ Grav. Reduction ELAP 198.6 _____ (QTY)
❑ Other (specify _____) _____ (QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield _____ (QTY)
❑ NY State PLM/TEM _____ (QTY)
❑ Residual Ash _____ (QTY)

TEM Dust*
❑ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
❑ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
❑ Quan. (s/area)Dust D6480-99 _____ (QTY)

TEM Water
❑ Qual. (pres/abs) _____ (QTY)
❑ ELAP 198.2/EPA 100.2 _____ (QTY)
❑ EPA 100.1 _____ (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples _____ °C)

Metals Analysis

☒ Pb Paint Chip 5 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 23 (QTY)
❑ *Pb Air _____ (QTY)
❑ Pb Soil/Solid _____ (QTY)
❑ Pb TCLP _____ (QTY)
❑ Drinking Water ❑ Pb ____ (QTY) ❑ Cu ____ (QTY) ❑ As ____ (QTY)
❑ Waste Water ❑ Pb ____ (QTY) ❑ Cu ____ (QTY) ❑ As ____ (QTY)
❑ Pb Furnace (Media _____) _____ (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
❑ *Spore-Trap ____ (QTY) ❑ Surface Vacuum Dust ____ (QTY)
❑ *Surface Swab ____ (QTY) ❑ Culturable ID Genus (Media ____) ____ (QTY)
❑ *Surface Tape ____ (QTY) ❑ Culturable ID Species (Media ____) ____ (QTY)
❑ Other (Specify ____) ____ (QTY)

MISC
❑ Vermiculite
❑ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX DUST	WATER/ OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
KingstonRC-PC-1	Beige Paint	11-2-12					X			X						Date/Time: Contact: By:
-2	white						X			X						
-3	gray						X			X						
-4	SEE ATTACHED FIELD DATA SHEETS						X			X						
-5	Green						X			X						Date/Time: Contact: By:
KingstonRC-ASB-1	Plaster	11-2-12				X				X						
																Date/Time: Contact: By:
KingstonRC-LW-1	-23	11-2-12					X				X					

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11/6/12 @ 1000 Via: Fed Ex By (Print): [redacted] Non-Responsive
2. Date/Time Analyzed: ____/____/____ @ ____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____/____/____ Time: _____ Initials: ____
4. Comments: 2456 2456 2456

Surface Sampling Field Data Sheet

Date Collected: 11-2-12
Job Number: 1061-15
Contact Pers: Non-Responsive

Job Name: Kingston RC
Job Location: 25 Kiersted Ave.
Address: Kingston, NY

Company: Bonvs Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
KingstonRC-LW-1	Field Blank	—	—	Ghost wipe
-2	Drill Hall	Floor, NW end	4"x4"	
-3		Floor, NE end		
-4		NE corner, on conduit		
-5		NE wall, top of locker		
-6		NW corner, top of Gray wood ledge		
-7	Rm 014 classroom	corner of Rm, top of Desk		
-8	Boiler Rm	top of blue tank		
-9	Rm 024	on exhaust fan fin		
-10	Rm 021	top of Locker 56		
-11	Rm 038A, Former indoor firing Range	NE end, on Floor		
-12		center, on light Fixture		
-13		SW end, on Floor		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-2-12
Job Number: 1061-15
Contact Pers: Non-Responsive

Job Name: Kingston RC
Job Location: 25 Kiersted Ave.
Address: Kingston, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
KingstonRC-LW-14	Rm 134	on copy machine	4"x4"	Ghost wipe
-15	Rm 130	top of vending machine		
-16	Lobby Area	top of display case		
-17	Rm 129	on Gym Floor		
-18	Rm 118 Break Rm	top of Refrigerator		
-19	Mens Locker Rm #109	top of Key Box 1		
-20	Rm 206	SW end, on supplied Air grill		
-21	Rm 217	on window sill		
-22	Rm 228	on Heat register		
-23	Classroom 236	on computer desk		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Asbestos Bulk Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	Job Name:	Kingston RC	Chain Of Custody:	514427
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	25 Kiersted Avenue, Kingston, NY	Date Analyzed:	11/12/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13011958	KingstonRC-Asb-1 PL	NAD	--	--	--	--	--	--	--	--	--	100	PL	White	Homogeneous	LBP	
13011959	KingstonRC-Asb-1 BC	NAD	--	--	--	--	--	--	--	--	--	100	BC	Brown	Homogeneous	LBP	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Direc Non-Responsive

Analyst(s) Non-Responsive

NVLAP (101143-0) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.
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4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514427

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Kingston RC
2. Job Location: 25 Kirsted Ave, Kingston, NY
3. Job #: 1061-15 P.O #: W912K8-09-A-0003
4. Contact Per: [redacted]
5. Submitted b: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include [redacted] th Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day 11/13/12	☒ Email: [redacted] bonusenvironmental.com
Comments:	☐ 2 Day Date Due: ☐ Results Required By Noon	☒ Fax: [redacted] us.army.mil
		☒ Verbal [redacted] us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate ____ (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.6 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)
*It is recommended that slack samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)
TEM Dust*
☐ Qual. (preslabs) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area) Dust D6480-99 ____ (QTY)
TEM Water
☐ Qual. (preslabs) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples ____ °C)
If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 5 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 23 (QTY)
☐ *Pb Air ____ (QTY)
☐ Pb Soil/Solid ____ (QTY)
☐ Pb TCLP ____ (QTY)
☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Pb Furnace (Media ____) ____ (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ____
Collection Media ____
☐ *Spore-Trap ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
☐ *Surface Swab ____ (QTY) ☐ Culturable ID Genus (Media ____) ____ (QTY)
☐ *Surface Tape ____ (QTY) ☐ Culturable ID Species (Media ____) ____ (QTY)
☐ Other (Specify ____) ____ (QTY)

CLIENT ID #	SAMPLE INFORMATION / SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	MATRIX: BULK	DUST	WOOD* OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
Kingstonrc-pc-1	Beige Paint	11-2-12					X			X						Date/Time: Contact: By:
-2	white						X			X						
-3	Gray						X			X						
-4	SEE ATTACHED FIELD DATA SHEETS						X			X						
-5	Green						X			X						Date/Time: Contact: By:
Kingstonrc-ksb-1	Plaster	11-2-12				X				X						Date/Time: Contact: By:
Kingstonrc-dw-1	7-23	11-2-12					X				X					

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 11/6/12 @ 1000 Via: [redacted] By: [redacted]
2. Date/Time Analyzed: 11/12/12 1540 [redacted]
3. Results Reported To: [redacted] Date: 11/12/12 Time: ____ Initials: LBP
4. Comments: 7935 2456 3546

Bulk Sampling Survey Sheet

Page 1 of 1

Date Collected: 11-2-12
Job Number: 1061-15
Contact Person: [redacted]

Job Name: Kingston RC
Job Location: 25 Kiersted Ave.
Address: Kingston, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: [redacted]
COC Number:

Sample Number	Homogenous Area ID	Type of Material	Sample Location	Friable	Condition of Material	Accessibility	Photo	Comments
Kingston RC -ASB-1	Surf	plaster	Rm 121	☐ Yes ☒ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☒ Medium ☐ High	☒ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

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Appendix D

Photographs

Building exterior, looking west

Room 029, peeling beige paint

Corridor 026, peeling white paint

Basement hallway

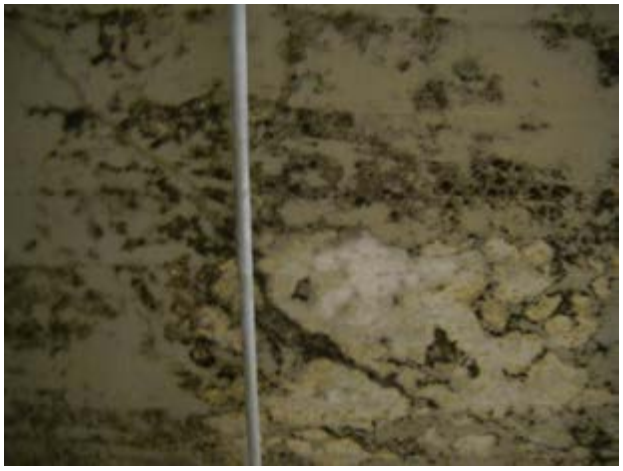
Boiler room

Basement Mech. Room, water-damaged concrete ceiling

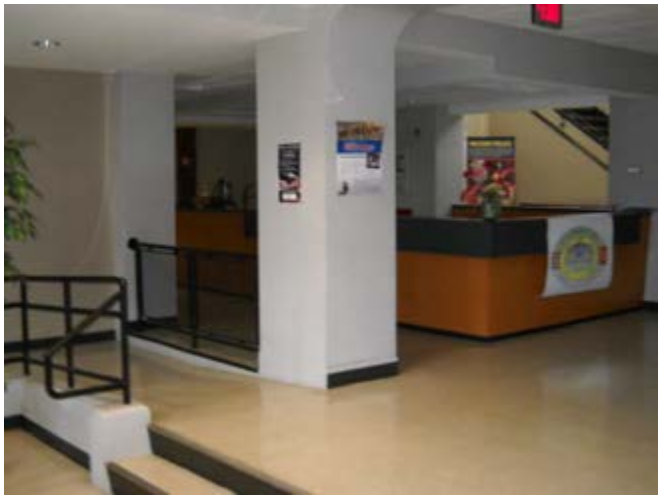
Room 038, peeling gray paint

Room 038A, former indoor firing range

Room 022, peeling yellow paint



Room 022, fungal growth on concrete ceiling



Lobby area

Corridor 132, stained dropped-ceiling tile

Room 121, damaged ceiling plaster

Gymnasium

Drill Hall

2nd floor hallway

"Old Supply area", peeling green paint

Appendix E

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct 2011.

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

MAY 1 1 2007

MEMORANDUM FOR National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 301-IH Old Bay Lane, Havre de Grace, MD 21078

SUBJECT: Industrial Hygiene Field Services Report No. 55-ML-048L-05/07, Industrial Hygiene Baseline Surveys, Leeds Armory, Leeds, New York, 21 September 2005

1. We are enclosing a copy of the subject report with an Executive Summary.

2. Our point of contact is Mr. Non-Responsive, at commercial (410) 436-5474/3118, DSN 584-5475/3118 or electronic mail: Non-Responsive @us.army.mil

FOR THE COMMANDER:

Non-Responsive

Director, Occupational Health Sciences

Encl

CF: (wo/CD-ROMs)
USACHPPM-NORTH (MCHB-AN-IH/MR. Non-Responsive)

Readiness thru Health

U.S. Army Center for Health Promotion and Preventive Medicine

USCHPPM

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
LEEDS ARMORY
LEEDS, NEW YORK
21 SEPTEMBER 2005

Distribution limited to U.S. Government agencies only. Requests for this document must be referred to the National Guard Bu[redacted] Industrial Hygiene Offi[redacted]NE/Ms. Non-Responsive 301-IH Old Bay Lane, Havre de Grace, MD 21078

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

Readiness Thru Health

DESTRUCTION NOTICE - Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
LEEDS ARMORY
LEEDS, NEW YORK
21 SEPTEMBER 2005

1. PURPOSE. To conduct industrial hygiene surveys at New York Army National Guard (NYARNG) facilities to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

2. CONCLUSIONS.

a. Lead Exposure. Levels of lead in dust that exceeded safe limits for adults and children were identified. These levels may result in health hazards to adults and to children visiting the Armory. Personnel working in the Armory may have been tracking dust-containing lead throughout the facility. Cleaning areas with elevated levels of lead in dust may further prevent lead from becoming redistributed throughout the Armory.

b. Asbestos. There was a potential for exposure to friable asbestos in the Armory. The building was originally constructed with asbestos-containing building materials (ACBM) used for insulation on the hot water pipes and the boiler system. Sections of these pipes were damaged. No asbestos management plan (AMP) could be located.

c. Safety and Occupational Health Programs. Annual Hazard Communication (HAZCOM) training was conducted and documented. The written HAZCOM program was incomplete. The program was a duplicate copy of the Latham Armory program, which had not been updated since April 1994.

d. Safety Concerns. Fire extinguisher records indicated that fire extinguishers had not been inspected since March 2004. The front entrance door was blocked. Several doors in the building did not open properly.

e. Lighting. In the professional judgment of the project officer, the lighting levels were adequate.

3. RECOMMENDATIONS.

a. Lead Exposure. Health Risk Assessment Code (RAC) 3 for child exposure. Health RAC 4 for adult exposure. Clean horizontal surfaces in the administrative areas to the National Guard Bureau (NGB) Region North Industrial Hygiene Office and US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum levels. Follow the guidance in Appendix E of the report. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the Drill Hall to the Environmental Protection Agency and State of New York lead in dust standards for young children, and clean other horizontal surfaces in the Drill Hall and Classroom to the NGB Region Industrial Hygiene Office North and USACHPPM recommended maximum level for lead in dust on frequently contacted surfaces. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. Health RAC 3. Review Leeds Armory and the New York State Division of Military and Naval Affairs office records to determine if there is an AMP or records of an asbestos survey for Leeds Armory. If no records are found, perform an asbestos survey to determine the location and amount of ACBM throughout the building. If an AMP is not found, develop, implement, and maintain one at Leeds. Expand the planned abatement for the boiler room to include the locker room pipe insulation and any other areas in the building where ACBM is identified.

c. Safety and Occupational Health Programs. Health RAC 3. Develop and implement a written HAZCOM program that is specific for Leeds Armory.

d. Other Building Concerns. Safety RAC 3. Inspect the building fire extinguishers monthly. Mark the tags on the fire extinguishers with the initials of the person conducting the inspection. Remove all objects blocking the entrance door. Fix all doors that do not open properly.

e. Lighting. No RAC can be assigned. If lighting seems inadequate, use task lighting.

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CONTENTS

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
LEEDS ARMORY
LEEDS, NEW YORK
21 SEPTEMBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE OF EVALUATION. To conduct industrial hygiene surveys at New York Army National Guard (NYARNG) facilities to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Fax, National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 27 July 2005, subject: SAB.

4. BACKGROUND. No floor plan could be located for this report.

a. Date of Construction. The construction date was 1961.

b. Size of Facility. Approximately 30,000 square feet.

c. Armory Use by Children. Ms. Non-Responsive, Hub Superintendent, stated that children visited the facility occasionally.

d. Mission. Support of a 105th Infantry Battalion detachment.

e. Point of Contact (POC). The POC was Mr. Non-Responsive, Facilities Management Supervisor, 330 Old Niskayuna Road, Latham, NY, 12110-2224, Phone: 518-786-4552.

5. FACILITY EVALUATION.

a. Sampling. Surface lead in dust, lead in air and bulk asbestos sampling was conducted to determine the existence of lead and asbestos hazards. Results are shown in Appendix B.

b. Physical Condition of Facilities.

(1) Paint. The paint was in good condition throughout the facility. All office areas had been recently painted. No chipping or deteriorating paint was observed.

(2) Asbestos. Ms. Non-Responsive, Hub Superintendent, stated that some pipe insulation in the boiler room had been identified as asbestos-containing building material (ACBM) and had been

encapsulated. Pipe insulation in the Locker Room (former Indoor Firing Range (IFR)) was damaged and contained suspected ACBM. A sample was collected for identification. No Asbestos Management Plan (AMP) was found.

(3) Mold and Moisture Problems. No mold or moisture problems were observed or reported.

(4) Building Physical Condition. The building was in fair to good condition. Major projects planned for 2006 included boiler replacement as well as ACBM pipe insulation abatement in the boiler room. Other projects such as repairing the front door, which does not open properly, were under consideration. Other doors in the building were also difficult to open.

(5) Former IFR. The IFR had been closed, lead had been abated, and the IFR had been converted to a Locker Room. Abatement documentation was at Latham.

c. Safety and Occupational Health Programs. Annual Hazard Communication (HAZCOM) training was conducted and documented. The written program was incomplete. The program was a duplicate copy of the Latham facility's program, which had not been updated since April 1994.

d. Heating, Ventilation, and Air Conditioning Systems. The building utilized a hot water heating system and was not air-conditioned. There was no industrial ventilation system.

e. Noise Dosimetry. No operations with the potential to generate hazardous noise levels were identified.

f. Lighting. The scope of work for this survey called for measurement of lighting levels in areas where there may have been a potential problem, based on professional judgment. The National Guard Bureau (NGB) verbally requested that light levels be measured throughout facilities. Due to miscommunication, the project officer visiting this site did not quantify light levels, but did use professional judgment in assessing the lighting levels.

g. Indoor Air Quality. Temperature in degrees Fahrenheit (ºF), Relative Humidity (RH) in percent, and carbon dioxide (CO_2) levels in parts per million (ppm) were sampled in three locations throughout the facility to assess building indoor environmental air quality. There was no industrial operation with the potential to produce carbon monoxide. The results are shown in the Table. The temperature averaged 74º F, RH averaged 58 percent, and CO_2 levels averaged 425 ppm. The American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc. recommends 71-81 ºF for an acceptable thermal environment in the summer, 30-60 percent RH, and maintaining CO_2 levels below the value of 700 ppm plus the outdoor ambient level of approximately 380 ppm. All values were within these guidelines.

TABLE. Indoor Air Quality Measurements.

Location	CO_2 (ppm)	Temp (°F)	RH (%)
Outdoors	425	74	58
Drill Hall	410	74	57
Classroom (basement)	460	74	56
Former IFR	410	74	61

h. Safety Concerns. Fire extinguisher tags had not been initialed for inspection since March 2004. Mr. [redacted] maintenance assistant, stated that he inspected the fire extinguishers monthly and kept the records in the office. The front entrance door area was blocked with boxes and other material.

6. ASSESSMENT CRITERIA FOR LEAD.

a. Lead in Air. The Army complies with the Occupational Safety and Health Administration (OSHA) 8-hour time-weighted average (TWA) Permissible Exposure Limit (PEL) of 50 micrograms of lead per cubic meter (µg/m³) of air.

b. Lead in Dust. The Environmental Protection Agency (EPA) and State of New York limits for lead in dust are 40 micrograms per square foot (µg/ft²) on floors, 250 µg/ft² on windowsills, and 400 µg/ft² in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North Industrial Hygiene Office concurs with the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level of 200 µg/ft² on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA/State standards. This limit was adopted from OSHA guidance in Compliance Letter 02-02-58. Additional information is provided in Appendix C.

c. Lead in Paint. Paint containing lead levels of 0.5 percent or more by weight in dried solid (also reported as 5,000 milligrams per kilogram) is considered to be lead-based paint according to both Federal and New York State Regulations.

7. SAMPLING RESULTS, DISCUSSION, AND CONCLUSIONS. The results with laboratory reports are shown in Appendix B.

a. Lead in Air. General area lead in air sampling was conducted in the Drill Hall, Locker Room (former IFR), Classroom (4B) and Recreation Room (5B). Results are shown in Table B-2, Appendix B. The air sample results were below the limit of detection of 12 µg/m³, as well as the OSHA 8-hour TWA and PEL of 50 µg/m³.

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b. Lead in Dust. Lead in dust sample locations and analytical results are shown in Table B-1, Appendix B. Sample results greater than 40 µg/ft² for floors or 200 µg/ft² for other surfaces are highlighted. One result exceeded the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level for lead in dust on floors. Personnel working in this room were potentially exposed to lead, and may have been tracking lead out of the area and redistributing it into adjacent rooms in the Armory. This can result in lead exposures for the general workforce and for children visiting this facility. These levels are hazardous to children exposed to lead dust through physical contact, inhalation, or ingestion of lead dust while visiting the Armory.

c. Asbestos. There was a potential for exposure to friable asbestos in the Armory. Damaged asbestos insulation may become friable and release asbestos fibers. The sampling result shown in Table B-3, Appendix B, confirms that the pipe insulation in the Locker Room (converted IFR) is ACBM. Army policy requires the Armory to establish and execute an AMP for any asbestos in the facility, and to take immediate corrective action where a possible asbestos hazard has been identified.

8. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Lead Exposure. Health RAC 3 for child exposure. Health RAC 4 for adult exposure. Clean horizontal surfaces in the administrative areas to the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level. Follow the guidance in Appendix E. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the Drill Hall to the EPA lead in dust standards for young children, and clean other horizontal surfaces in the Drill Hall and Classroom to the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level for lead in dust on frequently contacted surfaces. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. Health RAC 3. Review Leeds Armory and the New York State Division of Military and Naval Affairs office records to determine if there is an AMP or records of an asbestos survey for Leeds Armory. If no records are found, perform an asbestos survey to determine the location and amount of ACBM throughout the building. If an AMP is not found, develop, implement, and maintain one at Leeds. Expand the planned abatement for the boiler

room to include the locker room pipe insulation and any other areas in the building where ACBM is identified.

c. Safety and Occupational Health Programs. Health RAC 3. Develop and implement a written HAZCOM program that is specific for Leeds Armory.

d. Other Building Concerns. Safety RAC 3. Inspect the building fire extinguishers monthly. Mark the tags on the fire extinguishers with the initials of the person conducting the inspection. Remove all objects blocking the entrance door. Fix all doors that do not open properly.

e. Lighting. No RAC can be assigned. If lighting seems inadequate, use task lighting.

9. PHOTOGRAPHS. See Appendix D.

10. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report, please contact the undersigned at commercial 410-436-3118, DSN 584-3118, or by electronic mail: Non-Responsive@us.army.mil

Non-Responsive
Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive
Program Manager
Industrial Hygiene Field Services Program

APPENDIX A

REFERENCES

1. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910, current ed.
http://www.osha.gov/comp-links.html

2. Department of Defense Instruction (DODI) 6055.1, Department of Defense Safety and Occupational Health Program, 19 August 1998.
http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

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http://www.usapa.army.mil/pdffiles/r40_5.pdf

4. AR 385-10, The Army Safety Program, 29 February 2000.
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5. DA PAM 40-501, Medical Services, Hearing Conservation Program, 10 December 1998.
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8. American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc. (ASHRAE) 62.1-2004, Ventilation for Acceptable Indoor Air Quality.
http://www.ashrae.org

9. ACGIH, Industrial Ventilation: A Manual of Recommended Practices, 25th ed., ACGIH, Cincinnati, OH 2003.

11. Environmental Protection Agency, Title 40 CFR, Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart M-National Emission Standard for Asbestos.

12. OSHA Directive CPL 02-02-58, Lead Exposure in Construction; Interim Final Rule – Inspection and Compliance Procedures, December 13, 1993.

APPENDIX B

SAMPLING RESULTS

NYARNG, IH Survey, Leeds Armory, Leeds, NY, Report No. 55-ML-048L-05/07, 21 Sep 05

TABLE B-1. Lead in Surface Dust Locations and Analytical Results.

Wipe Sample Number	Location of Samples	Result (µg/ft^2)
LE-W01	Locker Room (Former IFR) – Bullet Trap Area Floor	87
LE-W02	Locker Room – Bullet Trap Area Wall	4.3
LE-W03	Locker Room – Top of Locker	310
LE-W04	Locker Room – Light Fixture	410
LE-W05	Locker Room – Door Outside	8.1
LE-W06	Basement Storage	68
LE-W07	Kitchen Stove Top Shelf	6.5
LE-W08	Room 5B	<2.7
LE-W09	Classroom 1st Floor, Room 4B	4.1
LE-W10	Office Desk Top, Room 15	17
LE-W13	Drill Hall – NW Corner	21
LE-W14	Drill Hall – NE Corner	2.9
LE-W15	Drill Hall – SE Corner	13,000
LE-W16	Drill Hall – SW Corner	31
LE-W17	Drill Hall – Center	37
LE-W18	Stairway to Basement	110
LE-W21	FATS Room	8.1

TABLE B-2. Lead in Air Locations and Analytical Results.

Air Sample Number	Location of Samples	Result (µg/ft^3)
LE-A01	Drill Hall	<12
LE-A02	Locker Room (Former IFR)	<12
LE-A03	Classroom, Room 4B	<13
LE-A04	Recreation Room, Room 5B	<13

TABLE B-3. Bulk Asbestos Sample Location and Analytical Result

Air Sample Number	Location of Samples	Result, % Total Asbestos (chrysotile)
LE-B01	Locker Room (Former IFR) Pipe Insulation	5

APPENDIX C

ASSESSMENT CRITERIA FOR LEAD

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean

there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If Soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Ambient air samples collected in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,

APPENDIX D

PHOTOGRAPHS

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Former IFR – bullet trap area floor

Former IFR – bullet trap area wall

Former IFR – door outside

Basement storage – drain pipe (former NCO Club)

Kitchen – stove shelf

"War Room" – room 5B

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Classroom 1st floor – room 4B

Office desktop – room 15

Drill Hall – NW corner

Drill Hall – NE corner

Drill Hall – SE corner

Drill Hall – SW corner

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Drill Hall – center floor

Locker Room (former IFR) – deteriorating pipe insulation

Asbestos containing insulation

Material blocking front entrance door

APPENDIX E

LEAD CLEANING GUIDANCE

CHAPTER 14: CLEANING

Cleaning: How To Do It

1. Include step-by-step procedures for precleaning, cleaning during the job, and daily and final cleanings in project design or specifications.
2. Assign responsibilities to specific workers for cleaning and for maintaining cleaning equipment.
3. Have sufficient cleaning equipment and supplies *before* beginning work.
4. If contamination is extensive, conduct precleaning of the dwelling unit. Move or cover all furniture and other objects.
5. Conduct ongoing cleaning during the job, including regular removal of large and small debris and dust. Decontamination of all tools, equipment, and worker protection gear is required before it leaves containment areas. Electrical equipment should be wiped and high-efficiency particulate air (HEPA) vacuumed, not wetted down, to minimize electrocution hazards.
6. Schedule sufficient time (usually 30 minutes to an hour) for a complete daily cleaning, starting at the same time near the end of each workday after lead hazard control activity has ceased.
7. For final cleaning, wait at least 1 hour after active lead hazard control activity has ceased to let dust particles settle.
8. Use a vacuum cleaner equipped with a HEPA exhaust filter. HEPA vacuum all surfaces in the room (ceilings, walls, trim, and floors). Start with the ceiling and work down, moving toward the entry door. Completely clean each room before moving on.
9. Wash all surfaces with a lead-specific detergent, high-phosphate detergent, or other suitable cleaning agent to dislodge any ground-in contamination, then rinse. Change the cleaning solution after every room is cleaned.
10. Repeat step 8. To meet clearance standards consistently, a HEPA vacuum, wet wash, and HEPA vacuum cycle is recommended. For interim control projects involving dust removal only, the final HEPA vacuuming step is usually not needed (see Chapter 11). Other cleaning methods are acceptable, as long as clearance criteria are met and workers are not overexposed.
11. After final cleaning, perform a visual examination to ensure that all surfaces requiring lead hazard control have been addressed and all visible dust and debris have been removed. Record findings and correct any incomplete work. This visual examination should be performed by the owner or an owner's representative who is independent of the lead hazard control contractor.
12. If other construction work will disturb the lead-based paint surfaces, it should be completed at this point. If those surfaces are disturbed, repeat the final cleaning step after the other construction work has been completed.
13. Paint or otherwise seal treated surfaces and interior floors.
14. Conduct a clearance examination (see Chapter 15).
15. If clearance is not achieved, repeat the final cleaning.

16. Continue clearance testing and repeated cleaning until the dwelling achieves compliance with all clearance standards. As an incentive to conduct ongoing cleaning and a thorough final cleaning, the cost of repeated cleaning after failing to achieve clearance should be borne by the contractor as a matter of the job specification, not the owner.
17. Do not allow residents to enter the work area until cleaning is completed and clearance is established.
18. Cleaning equipment list:
    - HEPA vacuums.
    - Detergent.
    - Waterproof gloves.
    - Rags.
    - Sponges.
    - Mops.
    - Buckets.
    - HEPA vacuum attachments (crevice tools, beater bar for cleaning rugs).
    - 6-mil plastic bags.
    - Debris containers.
    - Waste water containers.
    - Shovels.
    - Rakes.
    - Water-misting sprayers.
    - 6-mil polyethylene sheeting (or equivalent).

Chapter 14: Cleaning

I. Introduction

This chapter describes cleaning procedures to be employed following abatement and interim control work. Dust removal as an interim control measure is covered in Chapter 11.

All lead hazard control activities can produce dangerous quantities of leaded dust. Unless this dust is properly removed, a dwelling unit will be more hazardous after the work is completed than it was originally. Once deposited, leaded dust is difficult to clean effectively. Whenever possible, ongoing and daily cleaning of leaded dust during lead hazard control projects is recommended. Ongoing and daily cleaning is also necessary to minimize worker exposures.

Cleaning is the process of removing visible debris *and* dust particles too small to be seen by the naked eye. Removal of lead-based paint hazards in a dwelling unit will not make the unit safe unless excessive levels of leaded dust are also removed. This is true regardless of whether the dust was present before or generated by the lead hazard control process itself. Improper cleaning can increase the cost of a project considerably because additional cleaning and clearance sampling will be necessary. However, cleaning and clearance can be achieved routinely if care and diligence are exercised.

A. Performance Standard

Although the cleaning methods described in this chapter are feasible and have been shown to be effective in meeting clearance standards, other methods may also be used if they are safe and effective. This performance-oriented approach should stimulate innovation, reduce cost, and ensure safe conditions for both residents and workers.

B. Small Dust Particles

Dust particles that are invisible to the naked eye remain on surfaces after ordinary cleaning procedures. A visibly clean surface may contain high and unacceptable levels of dust particles and require special cleaning procedures.

C. Difficulties in Cleaning

While cleaning is an integral and essential component of any lead hazard control activity, it is also the most likely part of the activity to fail.

Several common reasons for this failure include low clearance standards, worker inexperience, high dust-producing methods, and deadlines.

1. Low Clearance Standards

Because very small particles of leaded dust are easily absorbed by the body when ingested or inhaled, a small amount can create a health hazard for young children. Therefore, "clearance standards" are extremely low for acceptable levels of leaded dust particles on surfaces after hazard control activities, and careful cleaning procedures are required. Although it is not possible to remove *all* leaded dust from a dwelling, it is possible to reduce it to a safe level.

Clearance standards are described more fully in Chapter 15. The permissible amount of leaded dust remaining on each of the following surfaces following lead hazard work is as follows:

- 100 µg/ft^2 on floors.
- 500 µg/ft^2 on interior window sills (stools).
- 800 µg/ft^2 on window troughs (the area where the sash sits when closed).
- 800 µg/ft^2 on exterior concrete.

These levels are based on wipe sampling. Clearance testing determines whether the premises or area are clean enough to be reoccupied after the completion of a lead paint hazard control project. A cleaned area may not be reoccupied until compliance with clearance standards has been established. To prevent delays, final testing and final cleaning activities should be coordinated.

2. Worker Inexperience

To understand the level of cleanliness required to meet the established clearance standards for hazard control cleanup, new hazard control personnel often require a significant reorientation to cleaning. Many construction workers are used to cleaning up only dust that they can see, not the invisible dust particles that are also important to remove.

3. High Dust-Producing Methods and/or Inadequate Containment

High dust-generating methods, inadequate containment during hazard control work, and poor work practices can all make achievement of clearance particularly difficult. Work practices necessary to prevent spreading of dust throughout a dwelling (e.g., by tracking dust out of work areas) are essential but sometimes tedious. Essential work practices are sometimes mistakenly considered to be "flexible guidelines" rather than necessary standards that are designed to ensure that the job is completed, not only safely, but also on time and within budget.

4. Deadlines

Daily and final cleanings have sometimes been compromised due to project deadlines, since cleaning comes at the end of the job. Hurried efforts often result in clearance failure. Delayed and over-budget hazard control projects are often the result of repeated, unplanned recleanings that are necessitated by inadequate containment and sloppy work practices.

II. Coordination of Cleaning Activities

A. Checklist

The owner or contractor may use the following cleaning checklist before any lead hazard control activity:

- ✓ Is the critical importance of cleaning in a hazard control project understood?
- ✓ Have all workers been trained and certified for hazard control work?
- ✓ Have the precleaning, daily, and final cleanings been scheduled properly and coordinated with the other participants in the hazard control process?
- ✓ Have cleaning equipment and materials been obtained?
- ✓ Do the workers know how to operate and maintain special cleaning equipment, and do they have directions for the proper use of all cleaning materials?
- ✓ Have all workers carefully studied the step-by-step procedures for precleaning (if needed), in-progress cleaning, and daily and final cleanings?
- ✓ Are all workers properly protected during the cleaning processes (see Chapter9)?
- ✓ Have provisions been made to properly contain and store potentially hazardous debris (see Chapter 10)?
- ✓ Have dust-clearance testing and related visual inspections been arranged (see Chapter 15)?
- ✓ Are the clearance criteria to be met fully understood?
- ✓ Have all appropriate surfaces been properly painted or otherwise sealed?
- ✓ Have appropriate records been maintained that document participants' roles in the hazard control project?

B. Equipment Needed for Cleaning

The following equipment is needed to conduct cleaning: high-efficiency particulate air (HEPA) vacuums and attachments (crevice tools, beater bar for cleaning rugs), detergent, waterproof gloves, rags, sponges, mops, buckets, 6-mil plastic bags, debris containers, waste water containers, shovels, rakes, water-misting sprayers, and 6-mil polyethylene plastic sheeting (or equivalent).

C. Waste Disposal

Regulations governing hazardous and nonhazardous waste storage, transportation, and disposal affect both the daily and final cleaning procedures. The hazard control contractor and the disposal contractor should work together to establish formal written procedures, specifying selected containers, storage areas, and debris pickups, to ensure that all relevant regulations are met.

III. Cleaning Methods and Procedures

Many of the special cleaning methods and procedures detailed in this chapter are not standard operating procedure for general home improvement contractors. Therefore, project designers, responsible agencies, or owners must ensure that contractors follow the methods and procedures recommended herein or specially designed alternative procedures, even though some may appear to be redundant and unnecessary. These methods have been shown to be feasible and effective in many situations and skipping steps in the cleaning procedures can be counterproductive.

A. Containment

Because of the difficulty involved in the removal of fine dust, dust generated by hazard control work should be contained to the extent possible to the inside of work areas. Inadequately constructed or maintained containment or poor work practices will result in additional cleaning efforts, due to dust that has leaked out or been tracked out of the work area (see Chapter 8).

B. Basic Cleaning Methods: Wet Wash and Vacuum Cleaning Techniques

Because leaded dust adheres tenaciously, especially to such rough or porous materials as weathered or worn wood surfaces and masonry surfaces (particularly concrete), workers should be trained in cleaning methods. As a motivator, some contractors have awarded bonuses to workers who pass clearance the first time.

Two basic cleaning methods have proven effective, when used concurrently, in lead-based paint hazard control projects: a special vacuum cleaner equipped with a HEPA exhaust filter, followed by wet washing with special cleaning agents and rinsing, followed by a final pass with the HEPA vacuum.

Although HEPA filtered vacuums and trisodium phosphate (TSP) cleaners have been considered the standard cleaning tools for lead hazard control projects, new research, discussed under the "Alternatives Methods" section in this chapter, suggests that other tools and products may also be effective in efficiently cleaning dust while providing adequate worker protection from airborne exposure risks. Some of these innovations may even be superior.

1. HEPA Vacuuming

HEPA vacuums differ from conventional vacuums in that they contain high-efficiency filters that are capable of trapping extremely small, micron-sized particles. These filters can remove particles of 0.3 microns or greater from air at 99.97 percent efficiency or greater. (A micron is 1 millionth of a meter, or about 0.00004 inches.) Some vacuums are equipped with an ultra-low penetration air (ULPA) filter that is capable of filtering out particles of 0.13 microns or greater at 99.9995 percent efficiency. However, these ULPA filters are slightly more expensive, and may be less available than HEPA filters.

Vacuuming with conventional vacuum machines is unlikely to be effective, because much of the fine dust will be exhausted back into the environment where it can settle on surfaces. A recent Canadian study revealed that fine-dust air levels were exceedingly high when a standard portable vacuum with a new bag was used, although partially filled bags were found to be more efficient (CMHC, 1992). Considerations for the proper use of a HEPA vacuum are listed below.

Operating Instructions

There are a numerous manufacturers of HEPA vacuums. Although all HEPA vacuums operate on the same general principle, they may vary considerably with respect to specific procedures, such as how to change the filters. To ensure the proper use of equipment, the manufacturer's operating instructions should be carefully followed and if possible, training sessions arranged with the manufacturer's representative.

Although HEPA vacuums have the same "suction" capacity as ordinary vacuums that are comparably sized, their filters are more efficient. Improper cleaning or changing of HEPA filters may reduce the vacuum's suction capability.

Special Attachments

Because the HEPA vacuum will be used to vacuum surfaces other than floors, operators should buy attachments and appropriate tool kits for use on different surfaces—such as brushes of various sizes, crevice tools, and angular tools.

Selecting Appropriate Size(s)

HEPA vacuums are available in numerous sizes, ranging from a small lunchbucket-sized unit to track-mounted systems. Two criteria for size selection are the size of the job and the type of electrical power available. Manufacturer recommendations should be followed.

Wet-Dry HEPA Vacuums

Some hazard control contractors have found the wet-dry HEPA vacuums to be particularly effective in meeting clearance standards. These vacuums are equipped with a special shut-off float switch to protect the electrical motor from water contact.

Prefilters

HEPA filters are usually used in conjunction with a prefilter or series of prefilters that trap the bulk of the dust in the exhaust airstream, particularly the larger particles. The HEPA filter traps most of the remaining small particles that have passed through the prefilter(s). All filters must be maintained and replaced or cleaned as specified in the manufacturer's instructions. Failure to do so may cause a reduction in suction power (thus reducing the vacuum's efficiency and effectiveness). Failure to change prefilters may damage the vacuum motor and will also shorten the service life of the HEPA filter, which is far more expensive than the prefilters.

HEPA Vacuuming Procedures

Surfaces frequently vacuumed include ceilings, walls, floors, windows, interior and exterior sills, doors, heating, ventilation, and air conditioning (HVAC) equipment (heating diffusers, radiators, pipes, vents), fixtures of any kind (light, bathroom, kitchen), built-in cabinets, and appliances.

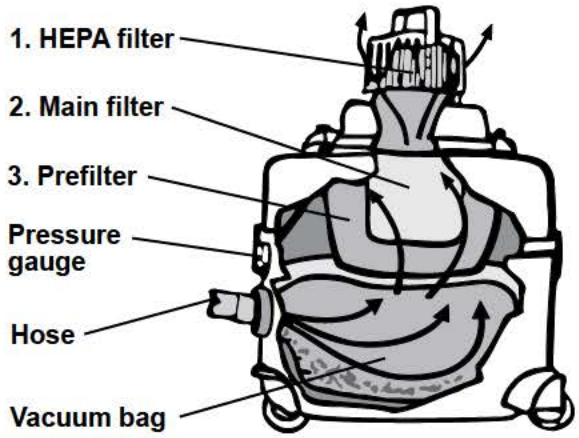
To aid in dislodging and collecting deep dust and lead from carpets, the HEPA vacuum must be equipped with a beater bar (agitator head) that is fixed to the cleaning head. This bar should be used on all passes on the carpet face during dry vacuuming (see Chapter 11 for details on carpet and furniture cleaning).

All rooms and surfaces should be included in the HEPA vacuum process, except for those that (1) were found not to have lead-paint hazards *and* were properly separated from work areas before the process began (see Chapter 8), or (2) were never entered during the process. Porches, sidewalks, driveways, and other exterior surfaces should be vacuumed if exterior hazard control work was conducted, or if debris was stored or dropped outside. Vacuuming should begin on the ceilings and end on the floors, sequenced to avoid passing through rooms already cleaned, with the dwellings' entryway cleaned last.

Emptying the HEPA Vacuum

Used filters and vacuumed debris are potentially hazardous waste and should be treated accordingly (see Chapter10). Therefore, operators should use extreme caution when opening the HEPA vacuum for filter replacement or debris removal to avoid accidental release of accumulated dust into the environment. This may occur, for example, if the vacuum's seal has been broken and the vacuum's bag is disturbed.

Figure 14.1a Vacuum With a HEPA Filter.



Parts of a HEPA-vacuum

Most HEPA-vacuums have three filters: HEPA filter, main filter, and prefilter. Debris gets sucked in through the hose into the vacuum bag. The air and dust get filtered through the prefilter, the main filter, and the HEPA filter. The HEPA filter captures the lead dust before the air is released into the work area again.

Operators should also wear a full set of protective clothing and equipment, including appropriate respirators, when performing this maintenance function, which should be done in the containment area or offsite.

2. Wet Detergent Wash

Several types of detergents have been used to remove leaded dust. Those with a high-phosphate content (containing at least 5 percent trisodium phosphate, also known as TSP) have been found to be effective when used as part of the final cleaning process (Milar, 1982). TSP detergents are thought to work by coating the surface of dusts with phosphate or polyphosphate groups which reduces electrostatic interactions with other surfaces and thereby permits easier removal. Because of environmental concerns some States have restricted the use of TSP, and some manufacturers have eliminated phosphates from their household detergents. However, high-TSP detergents can usually be found in hardware stores and may be permitted for limited use, such as lead hazard control.

Other non-TSP cleaning agents developed specifically for removing leaded dust have also been found to be effective (possibly more effective than TSP) in limited trials by several

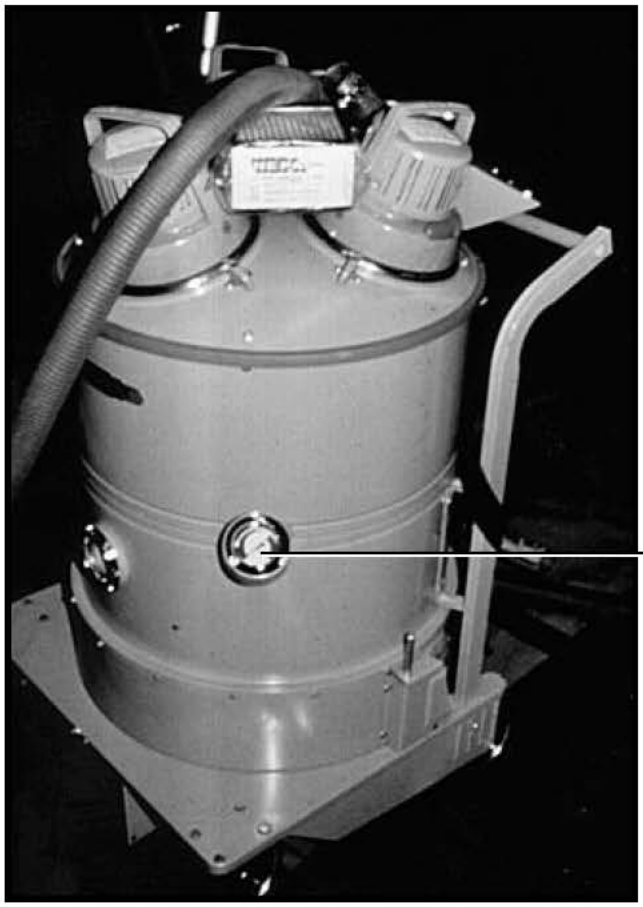
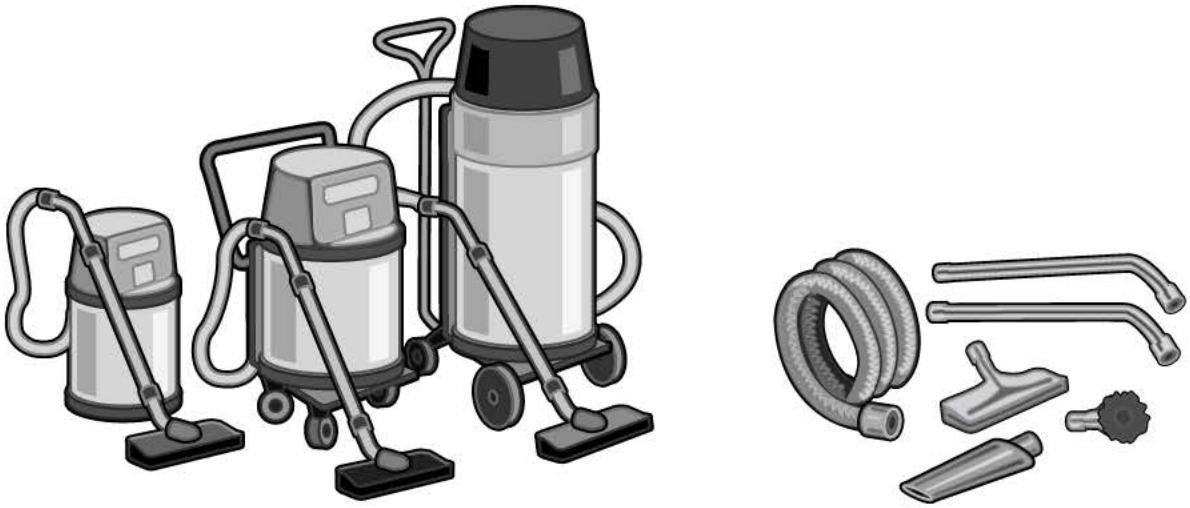


Figure 14.1b Pressure Gauge Indicator Shows When Filters Require Changing.

Figure 14.2 HEPA Vacuum Sizes and Tools.



investigators (Grawe, 1993; Wilson, 1993) and may also be safer, since TSP is a skin and eye irritant. See section VII for more information on non-TSP detergents. Proper procedures for using high-phosphate detergents also apply to most other types of detergents and include the following steps:

Manufacturer's Dilution Instructions

Users of cleaning agents for leaded dust removal should follow manufacturer's instructions for the proper use of a product, especially the recommended dilution ratio. Even diluted, trisodium phosphate is a skin irritant and users should wear waterproof gloves. Eye protection should also be worn, and portable eyewash facilities should be located in or very near the work area. Consult manufacturer's directions for the use of other detergents.

Appropriate Cleaning Equipment

Because a detergent may be used to clean leaded dust from a variety of surfaces, several types of application equipment are needed, including cleaning solution spray bottles, wringer buckets, mops, variously sized hand sponges, brushes, and rags. Using the proper equipment on each surface is essential to the quality of the wet-wash process.

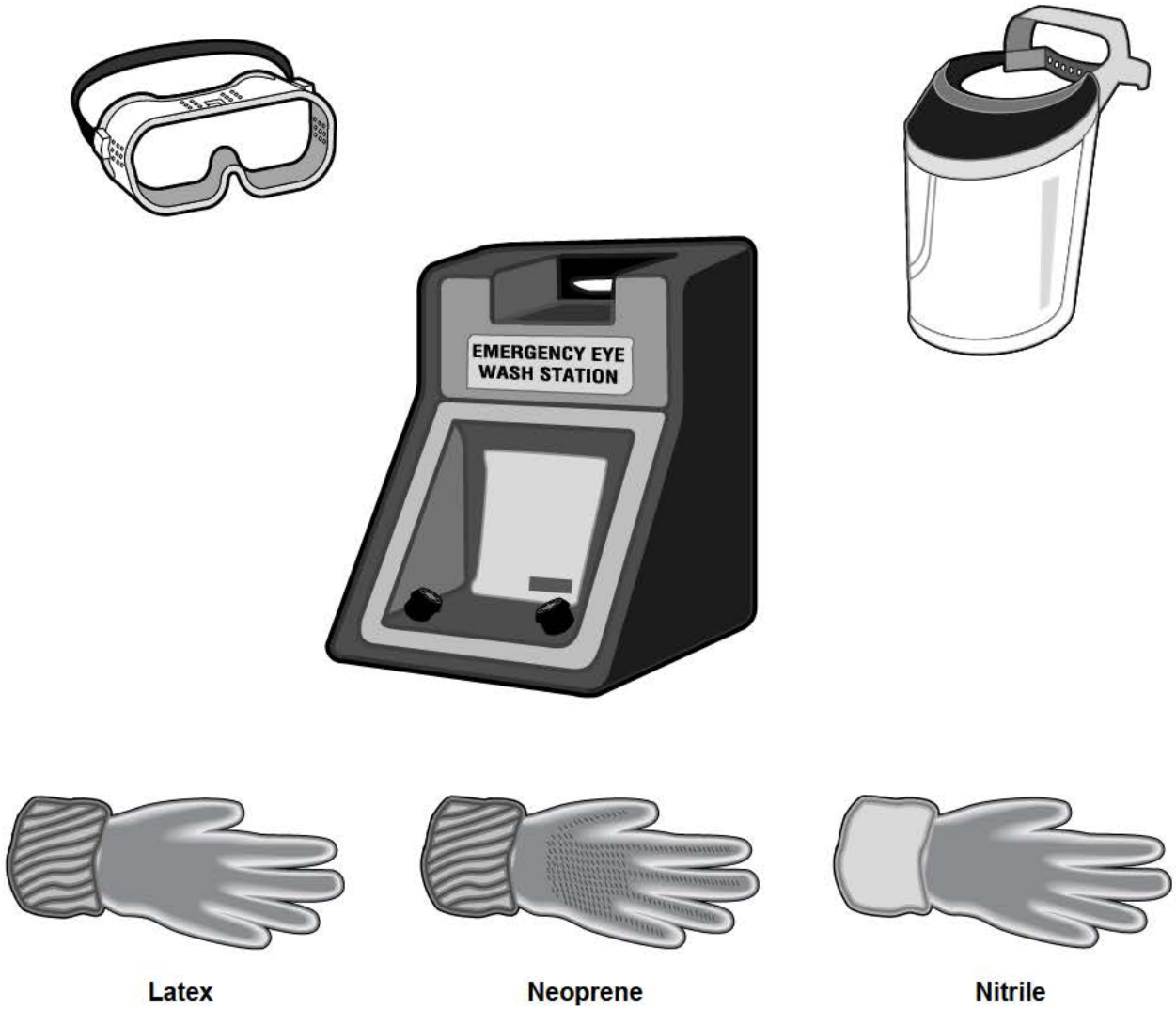
Proper Wet-Cleaning Procedures

At the conclusion of the active lead hazard control process and the initial HEPA vacuuming, all vacuumed surfaces should be thoroughly and completely washed with a high-phosphate solution or other lead-specific cleaning agent (or equivalent) and rinsed. Select a detergent that does not damage existing surface finishes (TSP may damage some finishes). Work should proceed from ceilings to floors and sequenced to avoid passing through rooms already cleaned.

Changing Cleaning Mixture

Many manufacturers of cleaners will indicate the surface area that their cleaning mixture will cover. To avoid recontaminating an area by cleaning it with dirty water, users should follow manufacturer-specified surface-area limits. However, regardless of manufacturers' recommendations, the cleaning mixture should be changed after its use for each room. As a rule of thumb, 5 gallons should be used to clean no

Figure 14.3 Goggles, Face Shields, Gloves, and Eye Wash Facilities Should Be Available When Used With Chemicals Such as TSP.



more than 1,000 square feet. Used cleaning mixture is potentially hazardous waste (see Chapter 10); consult with your local water and sewage utility for directions on its proper disposal. Wash water should never be poured onto the ground. The wash water is usually filtered and then poured down a toilet (if the local water authority approves).

3. The HEPA/Wet Wash/HEPA Cycle

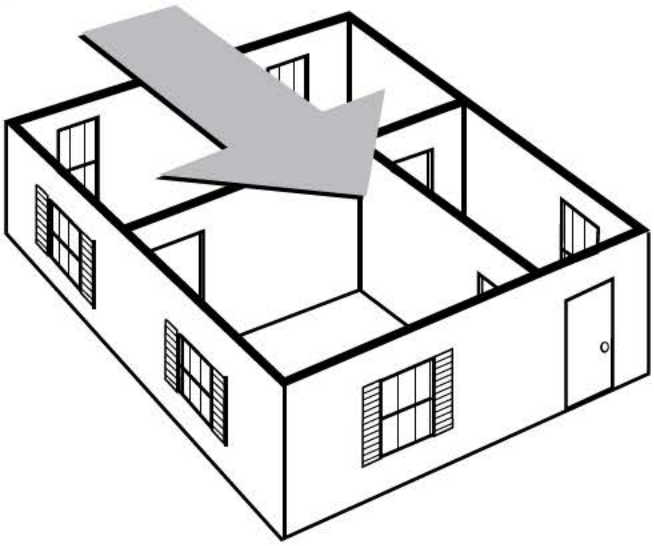
Typical Procedures

The usual cleaning cycle that follows lead hazard control activities is called the HEPA vacuum/wet wash/HEPA cycle and is applied to an entire affected area as follows:

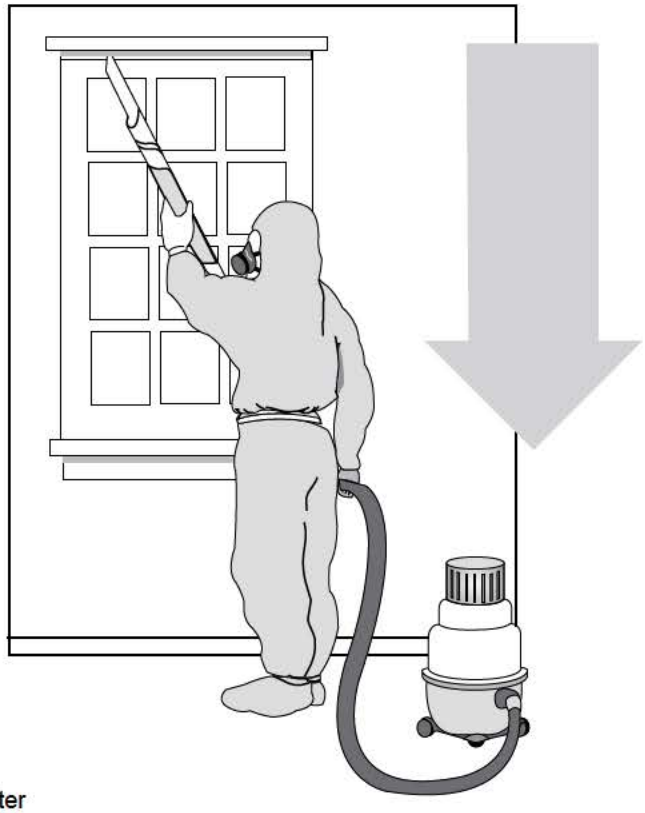
- First, the area is HEPA vacuumed.

Figure 14.4a The HEPA Vacuum, Wet Wash, HEPA Vacuum Cycle Helps in Meeting Clearance Standards.

HEPA vacuum all surfaces
Start at the end farthest from the main entrance/exit. As you vacuum, move towards the main exit and finish there.



Begin at the top of each room and work down. For example, start with the top shelves, the top of the woodwork, and so on, and work down to the floor. Do every inch of the windows, especially the window troughs.



Courtesy: Alice Hamilton Occupational Health Center

- Next, the area is washed down.
- After drying, the area is again HEPA vacuumed.

The rationale for this three-pass system is as follows:

- The first HEPA vacuum removes as much dust and remaining debris as possible.
- The wet wash further dislodges dust from surfaces.
- The final HEPA cycle removes any remaining particles dislodged but not removed by the wet wash.

Single-Pass Wet Wash/HEPA Vacuum

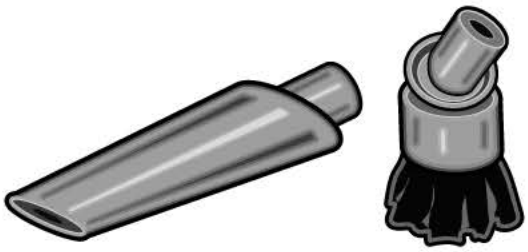
Some lead hazard control contractors have found HEPA spray cleaner vacuums to be a cost-effective alternative to the three-pass system. Similar to home carpet-cleaning machines, these vacuums simultaneously deliver a solution to the surface and recover the dirty solution. Theoretically, this process combines two of the steps in the HEPA vacuum/wet wash/HEPA cycle into one step. While anecdotal evidence indicates that the spray cleaner wet wash/HEPA is effective for some uses, limitations have been noted in its use for ceilings, vertical surfaces, and hard to reach areas. This device may be used as long as clearance standards are met.

Figure 14.4b (continued)

Use special attachments
Use the rubber cone where the floor meets the baseboard and along all the cracks in the floor boards. Use the brush tool for walls and woodwork.

Use the wheeled floor nozzle for bare floors and the carpet beater for rugs.

Move slowly
Vacuum slowly so the HEPA vacuum can pick up all the lead dust.



Rubber Cone **Dust Brush**

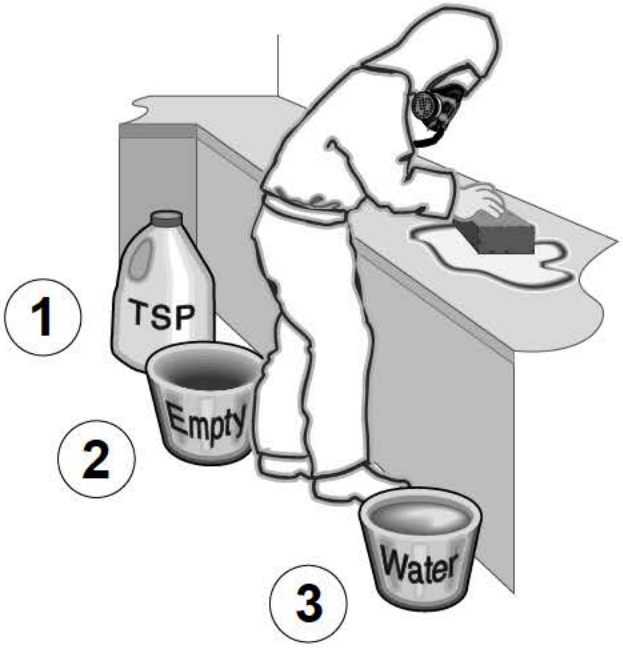
Powered Carpet Beater

Wheeled Floor Nozzle

Figure 14.4c (continued)

Wash all surfaces with suitable detergents

Wash *all surfaces* in the work area with suitable detergents, including areas that had been covered with plastic. Some wallpaper should only be HEPA vacuumed, since it may be damaged by the detergent.



Wipe All Surfaces

Wet Mop Floor

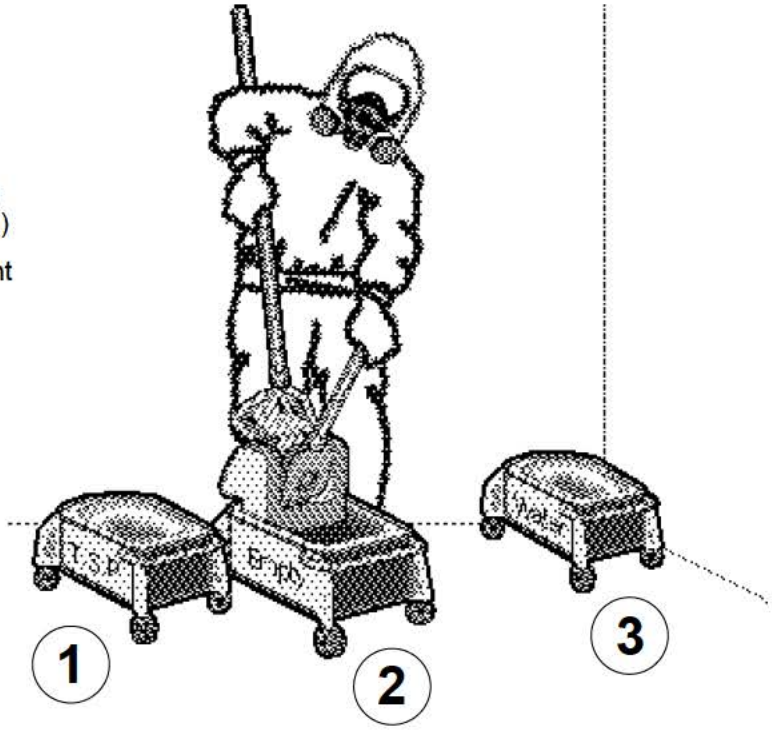
Don't Dry Sweep

Figure 14.4c (continued)

Use the 3-Bucket System.

To wash: Use string mops and mop buckets with wringers. (Some experts say NEVER use a sponge mop on the floor. Sponge mops may only push the lead around on the floor, not remove it.)

Dip the string mophead in the detergent wash in bucket #1. Mop the floor.



Squeeze out the mophead in empty bucket #2. Return to bucket #1 for more detergent solution and continue mopping. Repeat.

Use the third bucket for rinsing the floor.

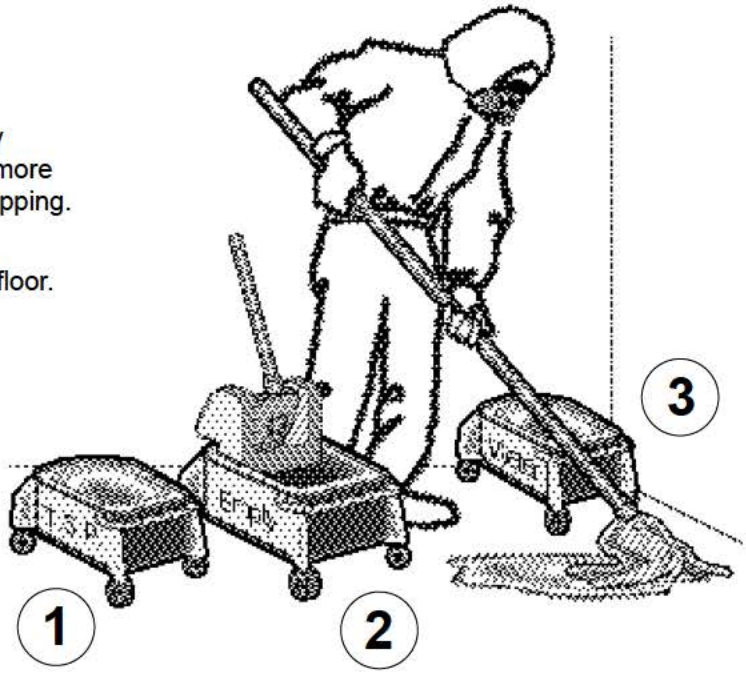
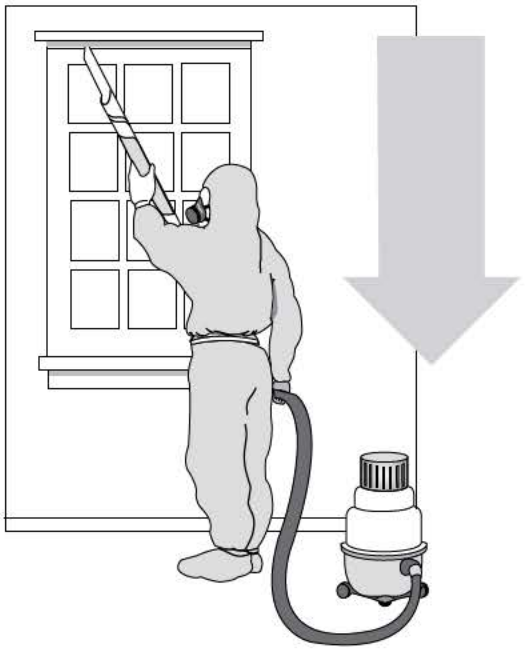


Figure 14.4d (continued)

HEPA vacuum all surfaces a final time
HEPA vacuum *all surfaces* in the work area, including areas that had been covered with plastic.

Starting at the far end, work towards the decontamination area. Begin with ceilings or the top of the walls and work down, cleaning the floors last. Do every inch of the windows, especially the troughs. Use the corner tool to clean where the floor meets the baseboard and all the cracks in the floor boards. Use the brush tool for the walls. Move slowly and carefully to get all the dust.



4. Sealing Floors

Before clearance, all floors without an intact, nonporous coating should be coated. Sealed surfaces are easier for residents to clean and maintain over time than those that are not sealed. Wooden floors should be sealed with a clear polyurethane or painted with deck enamel or durable paint. Vinyl tile, linoleum, and other similar floors should be sealed with an appropriate wax. Concrete floors should be sealed with a concrete sealer or other type of concrete deck enamel. However, if these floors are already covered by an effective coat of sealant, it may be possible to skip this step.

As an alternative to sealing, floors may be covered with new vinyl tile, sheet vinyl, linoleum flooring, or the equivalent to create a more permanent cleanable surface. New surfaces should be cleaned with a cleaning solution that is appropriate for that type of surface.

IV. Order of Cleaning Procedures During Lead Hazard Control

The special cleaning procedures to be followed during a lead-based paint hazard control project are discussed in chronological order below. Skipping steps in the process may result in failure to meet post-lead hazard control clearance standards.

A. Precleaning Procedures

Precleaning (i.e., cleaning conducted before lead hazard control is begun) is necessary only in dwelling units that are heavily contaminated with paint chips. Precleaning involves the removal of large debris and paint chips, followed by HEPA vacuuming. These steps may be followed by removal of occupant personal possessions, furniture, or carpeting, depending on the

Figure 14.5 Single-Pass HEPA Vacuum/Wet Wash Technology.

Worksite Preparation Level selected (see Chapter 8). If the furniture will not be cleaned, it should be removed from the area or covered with plastic prior to beginning the precleaning procedure. Carpeting should always be misted before its removal to control the generation of hazardous dust.

It is usually the resident's responsibility to remove most of his or her personal possessions. However, if necessary, owners or project management should be prepared to complete this activity before lead hazard control work begins. As a last resort, the contractor may pack any remaining belongings and carefully seal and move the boxes, supplying all necessary boxes, packing materials, and staff to complete the task. Following cleaning and clearance, the contractor should return all packed items to their appropriate places. Leaving these tasks to the contractor may be expensive and inefficient, since the contractor will need to be insured for this function if the occupant's

Figure 14.6 Precleaning Is Needed in Areas Where Contamination and Deterioration Are High.

belongings are damaged. Additionally, moving furniture, rugs, drapes, and other items owned by the occupant could increase leaded dust levels. Clearance should be conducted after cleaning but before resident items are moved back in.

B. Ongoing Cleaning During the Job

Periodic HEPA vacuuming during the lead hazard control work may be necessary to minimize tracking of dust and paint chips from one area to another (e.g., when a large amount of paint chips or dust is being generated).

C. Daily Cleaning Procedures

Cleaning activity should be scheduled at the end of each workday when all active lead hazard control throughout the dwelling has ceased. Sufficient time must be allowed for a thorough and complete cleaning (usually about 30 minutes to an hour). Daily cleaning helps achieve clearance dust levels by minimizing problems that may otherwise occur during final cleaning and limiting worker exposures. While daily cleaning can be skipped in vacant dwelling units, it is required when occupants will return in the evening. Under no circumstances should debris or plastic be left outside overnight in an unsecured area, even if the dwelling is vacant. Daily cleaning should consist of:

- Removing large debris.
- Removing small debris.
- HEPA vacuuming, wet clean, HEPA vacuuming (horizontal surfaces only).
- Cleaning exterior.
- Patching and repairing plastic sheeting.
- Securing debris/plastic.

Figure 14.7 Plastic Sheeting Should Be Repaired as Part of Daily Cleanup.

1. Large Debris

Large demolition-type debris (e.g., doors, windows, trim) should be wrapped in 6-mil plastic, sealed with tape, and moved to a secure area on the property designated for waste storage. All sharp corners, edges, and nails should be hammered down to prevent injury and minimize the tearing of plastic. It is not necessary to wrap each individual piece of debris in plastic if the entire load can be wrapped. A secure area either outside or inside the property must be designated as a temporary waste-storage area. Covered, secured, and labeled dumpsters placed on or near the property may be used. Proper segregation of waste should be enforced at this time (see Chapter 10).

2. Small Debris

After being misted with water, small debris should be swept up, collected, and disposed of properly. The swept debris should be placed in double 4-mil or single 6-mil polyethylene (or equivalent) plastic bags, properly sealed, and moved to the designated trash storage area. Trash bags should not be overloaded; overloaded bags may rupture or puncture during handling and transport.

3. Exterior Cleaning

Areas potentially affected by exterior lead hazard control should be protected via a containment system (see Chapter 8). Because weather can adversely affect the efficacy of exterior

containment, the surface plastic of the containment system should be removed at the end of each workday. On a daily basis, as well as during final cleaning, the immediate area should be examined visually to ensure that no debris has escaped containment. Any such debris should be raked or vacuumed and placed in single 6-mil or double 4-mil plastic bags, which should then be sealed and stored along with other contaminated debris. HEPA vacuuming is appropriate for hard exterior surfaces, not soil.

4. Worker Protection Measures

General worker protection measures are discussed in Chapter 9. Studies indicate that during daily cleaning activities, especially while wet sweeping, workers may be exposed to high levels of airborne dust. Therefore, workers should wear protective clothing and equipment, especially appropriate respirators.

5. Maintaining Containment

The integrity of the plastic sheeting used in a lead hazard control project must be maintained. During their daily cleaning activities, workers should monitor the sheeting and immediately repair any holes or rips with 6-mil plastic and duct tape.

V. Order of Final Cleaning Procedures After Lead Hazard Control

Before treated surfaces can be painted or sealed, final cleaning procedures must be completed. Because airborne dust requires time to settle, the final cleaning process should start no sooner than 1 hour after active lead hazard control has ceased in the room. See Appendix 11 for details regarding dust settling.

A. Final Cleaning

As the first stage in the final cleaning, floor plastic should be misted and swept as detailed earlier in this chapter. Upper-level plastic, such as that on cabinets and counters, should be removed first, after it has been misted with water *and cleaned*. All plastic should be folded carefully from the corners/ends to the middle to trap any remaining dust. Next, remove both layers of plastic from the floor.

Plastic sheets used to isolate contaminated rooms from noncontaminated rooms should remain in place until after the cleaning and removal of other plastic sheeting; these sheets may then be misted, cleaned, and removed last.

Removed plastic should be placed into double 4-mil or single 6-mil plastic bags, or plastic bags with equivalent (or better) performance characteristics, which are sealed and removed from the premises. As with daily cleanings, this plastic-removal process usually requires workers to use protective clothing and respirators.

After the plastic has been removed from the contaminated area, the entire area should be cleaned using the HEPA/wet wash/HEPA cycle, starting with the ceiling and working down to the floor. After surfaces are repainted or sealed, a final HEPA/wet wash/HEPA cycle may be necessary if accumulated dust caused by other work is visible.

1. Decontamination of Workers, Supplies, and Equipment

Decontamination is necessary to ensure that worker's families, other workers, and subsequent properties do not become contaminated. Specific procedures for proper decontamination of equipment, tools, and materials prior to their removal from lead hazard control containment areas should be implemented, as described below and in Chapters 9 and 10.

Work clothing, work shoes, and tools should not be placed in a worker's automobile unless they have been laundered or placed in sealed bags. All vacuums and tools that were used should be wiped down using sponges or rags with detergent solutions.

Consumable/disposable supplies, such as mop heads, sponges, and rags, should be replaced, after each dwelling is completed. Soiled items should be treated as contaminated debris (see Chapter 10).

Figure 14.8a Pick Up Corners of Plastic Sheeting.

Figure 14.8b Fold Plastic Inward.

Durable equipment, such as power and hand tools, generators, and vehicles, should be cleaned prior to their removal from the site; the cleaning should consist of a thorough HEPA vacuuming followed by washing.

B. Preliminary Visual Examination

After the preliminary final cleaning effort is completed, the certified supervisor should visually evaluate the entire work area to ensure that all work has been completed and all visible dust and debris have been removed. While the preliminary examination may be performed by the lead hazard control supervisor, contractor, or owner as a preparatory step before the final clearance examination, it does not replace the independent visual assessment conducted during clearance.

If the visual examination results are unsatisfactory, affected surfaces must be retreated and/or recleaned. Therefore, it is more cost effective to have the supervisor rather than the clearance examiner perform this initial examination.

C. Surface Painting or Sealing of Nonfloor Surfaces

The next step of the cleaning process is painting or otherwise sealing all treated surfaces except floors.

Surfaces, including walls, ceilings, and woodwork, should be coated with an appropriate primer and repainted. Surfaces enclosed with vinyl, aluminum coil stock, and other materials traditionally not repainted are exempt from the painting provision.

D. Final Inspection

The final clearance evaluation should take place at least 1 hour after the final cleaning. Clearance has three purposes: 1) to ensure that the lead hazard control work is complete, 2) to detect the presence of leaded dust, and 3) to make sure that all treated surfaces have been repainted or otherwise sealed. Clearance is usually performed after the sealant is applied to the floor. See Chapter 15 for information on clearance examination procedures.

E. Recleaning After Clearance Failure

If after passing the final visual examination, the dwelling unit fails the clearance wipe dust tests,

the HEPA/wet wash/HEPA cleaning cycle should be carefully and methodically repeated. Failure is an indication that the cleaning has not been successful. Recleaning should be conducted under the direct supervision of a certified supervisor. Care should be exercised during the recleaning of "failed" surfaces or components to avoid recontaminating "cleared" surfaces or components.

VI. Cleaning Cost Considerations

An important consideration in determining lead hazard control strategies and methods is the cost and difficulty of required daily and final cleanup operations and the ease with which one can meet dust-clearance standards. A general rule of thumb is that lead hazard control strategies that generate the most dust will have higher cleanup costs and higher initial clearance test-failure rates.

A. Initial Clearance Test Failure Rates

The likelihood of passing final dust-clearance tests is highly correlated with the chosen intervention strategy, methods, and care exercised by the contractor. For example, in one study (HUD, 1991) initial wipe-test failure rates were 14 percent for interior window sills, 19 percent for floors, and 33 percent for window troughs. The pass/fail rates for each surface were strongly associated with the dwelling unit abatement strategy employed. Chemical removal and hand-scraping strategies experi-enced higher failure rates than replacement and encapsulation/enclosure strategies (see Table 14.1).

However, results of the HUD demonstration project indicated that clearance failure is not solely related to abatement method. The report stated that "the diligence and effectiveness of an abatement contractor's cleaning process ... had a major impact on ... the likelihood of the dwelling unit to pass the final wipe test clearance" (HUD, 1991).

Figure 14.8c Dispose of Plastic Sheeting in a Plastic Trash Bag.

B. Key Factors In Effective Cleaning

Effective cleaning will be aided by adequate sealing of surfaces with polyethylene sheeting prior to lead hazard control, proper daily cleaning practices, good worker training, and attention to detail. Where poor worksite preparation is employed, additional cleaning may be required to meet clearance.

C. Special Problems

Surfaces such as porous concrete, old porous hardwood floors, and areas such as corners of rooms and window troughs pose especially difficult cleaning challenges. Porous concrete and corners of rooms normally require additional vacuuming to achieve an acceptable level of cleanliness.

The lead hazard control strategy of enclosure is frequently chosen for window troughs and for old porous hardwood floors due to the difficulty of adequately cleaning these surfaces. This

option provides not only a clean surface but a more permanently cleanable surface for dwelling occupants to maintain.

VII. Alternative Methods

Alternatives to the recommended cleaning tools and practices discussed in this chapter are available, some having significant potential for increasing effectiveness and lowering costs.

A recent Canadian study (CMHC, 1992) evaluated the effectiveness of contaminated dust cleanup activities using tools that would generally be available to construction contractors and homeowners. Vinyl flooring and carpeting were cleaned using several wet/dry vacuuming systems, sweeping, and wet mopping. The study found that regular vacuums with empty bags send a steady stream of fine particles into the air, while vacuums with partially filled bags were more efficient. This finding suggests the necessity for HEPA vacuums. Other vacuums may be used if workers do not experience increased exposures, if compliance with clearance standards is achieved, and if a variance from OSHA regulation (29 CFR 1926.62 (h)(4)) is obtained by the contractor or employer (if required).

Agitator heads on vacuums were demonstrated to significantly enhance vacuum effectiveness on carpets in cleaning up fine dust without increasing airborne dust levels. Table 14.2 suggests that a central vacuum with an agitator head is most efficient at removing dust and minimizing recontamination, probably because the vacuum exhaust is blown away from living areas. Because many houses do not have central vacuuming systems, a portable HEPA vacuum is the next best choice (see Table 14.2). Vacuums without agitator heads appeared to perform relatively poorly on carpets.

A. Vacuums

Regular (non-HEPA) dry vacuums potentially produce hazardous levels of airborne dust and therefore should be avoided. Externally exhausted vacuum units with adequate dust-retaining capability may be used. The OSHA lead standard requires the use of HEPA vacuum equipment (see 29 CFR 1926.62 (h)(4), which states, "where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters").

B. Trisodium Phosphate and Other Detergents

TSP detergents have been used successfully for a number of years in lead hazard control work. However, in recent years, other new cleaning agents have been developed specifically for leaded dust removal. The need for alternatives has been fueled by the fact that TSP is an eye

Table 14.1 Initial Cleaning Wipe-Test Failure Rates for Various Abatement Strategies

Dust Test Location	Hand Scrape w/Heat Gun	Chemical Removal	Enclosure	Encapsulation	Replacement	All Methods
Floors	28.8%	22.7%	20.0%	13.8%	12.5%	19%
Sills	24.4%	24.1%	8.2%	4.8%	17.4%	14%
Wells	44.5%	45.7%	23.7%	25.7%	21.0%	33%

Source: U.S. Department of Housing and Urban Development (August 1991) The HUD Lead-Based Paint Abatement Demonstration (FHA)

and skin irritant and is increasingly restricted from household use and unavailable in many local jurisdictions. TSP also damages some finishes. Recently reported trials of two new products suggest that alternative lead-specific cleaning agents may be more effective and safer than TSP (Grawe, 1993; Wilson, 1993).

These *Guidelines* do not prohibit the use of non-TSP cleaning agents. HUD encourages further evaluation of alternative cleaning methods. Use of any cleaning agent that results in compliance with clearance criteria is encouraged.

Table 14.2 Mass Removal Efficiency for Extended Vacuuming Cycles

Cycle Number	Mass Removal Efficiency Percentages			
	Cleaning Method			
	Central Vacuum—Plain Tool	Central Vacuum—Agitator Head	HEPA Vacuum	Portable Vacuum—Plain Tool
1	34.7	71.0	55.4	17.5
2	47.0	80.2	61.2	23.0
3	51.9	85.9	66.3	26.6
4	56.0	87.8	67.0	29.4
5	59.3	88.9	72.1	32.5
6	61.6	91.2	74.4	34.9
7	63.8	93.1	76.4	36.5
8	67.5	95.4	77.5	38.1
9	67.5	97.7	78.7	40.1
10	67.2	100.0	80.2	41.7
11		102.3	80.2	41.7
12		104.6	84.1	44.8
13		104.6	84.5	46.8
14		103.8	84.5	48.4
15				49.6
16				50.8
17				52.4
18				53.6
19				54.4
20				55.2

Source: Canada Mortgage and Housing Corporation: Saskatchewan Research Council (December 1992) *Effectiveness of Clean-up Techniques for Leaded Paint Dust*

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Leeds Readiness Center
Leeds, NY 12451

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 18, 2013

Bonus Environmental, LLC

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APPENDICES

January 18, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Leeds Readiness Center, Leeds, NY 12451

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Leeds Readiness Center located at 2515 Route 23 in Leeds, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on November 5, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Leeds Readiness Center is an Army National Guard armory comprised of offices, classrooms, locker rooms, storage rooms, conference rooms, a drill hall, a kitchen, a break room, a fitness room, a boiler room, mechanical/telecomm rooms, a former indoor firing range, and three (3) maintenance bays. The point of contact for the approximately 30,094 ft² Leeds Armory is Ms. Non-Responsive. Four (4) full-time administrative personnel are employed at the Leeds Readiness Center. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Fourteen (14) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Leeds Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
Leeds RC-LW-1	11-5-12	Field Blank	---	< 12 μg
Leeds RC-LW-2	11-5-12	Drill Hall, on floor, NE end	0.111	< 110
Leeds RC-LW-3	11-5-12	Drill Hall, on floor, SW end	0.111	< 110
Leeds RC-LW-4	11-5-12	Drill Hall, on electrical panel box	0.111	20,000
Leeds RC-LW-5	11-5-12	Drill Hall, on fan on/off box	0.111	600
Leeds RC-LW-6	11-5-12	Drill Hall, on table surface	0.111	< 110
Leeds RC-LW-7	11-5-12	Kitchen, on top of microwave	0.111	< 110
Leeds RC-LW-8	11-5-12	Break Room (118), on window sill	0.111	< 110
Leeds RC-LW-9	11-5-12	Storage (115), on supply air grill	0.111	< 110
Leeds RC-LW-10	11-5-12	Mechanical Room (230), HVAC System, on fan side	0.111	< 110
Leeds RC-LW-11	11-5-12	Mechanical Room (230), HVAC System, on supply side	0.111	< 110
Leeds RC-	11-5-12	Storage (Former Indoor Firing Range), on floor, “bullet trap”	0.111	150

Army National Guard – Leeds Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-12		area		
Leeds RC-LW-13	11-5-12	Storage (Former Indoor Firing Range), on heater grill		1,800
Leeds RC-LW-14	11-5-12	Storage (Former Indoor Firing Range), on light fixture	0.111	730
Leeds RC-LW-15	11-5-12	Maintenance Bay 2, on work table surface	0.111	3,200

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range is currently used for storage. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area. The bullet trap had been removed from the "bullet trap area".

2.2 – Lead Air Sampling

The purpose of lead air monitoring was to document task-specific activities and corresponding exposures to lead. OSHA 29 CFR 1926.62 requires employers whose employees are exposed to lead in the work place, in any quantity, make a determination whether any employee's exposure exceeds the action level (AL) of 30 micrograms per cubic meter ($\mu g/m^3$) or the maximum permissible exposure limit (PEL) of 50 $\mu g/m^3$ as 8-hour time weighted averages (TWAs). If employee exposures are less than 30 $\mu g/m^3$, training is required under the Hazard Communication 29 CFR 1926.59. Exposures that exceed the AL or PEL require the employer to comply with additional requirements, including air monitoring, additional training, and restricted work practices as outlined in OSHA 29 CFR 1926.62.

Representative fixed area sampling was conducted for potential airborne concentrations of lead in accordance with accepted Industrial Hygiene methods recognized by the National Institute for Occupational Safety and Health (NIOSH) and OSHA. Representative breathing zone samples were not collected from an employee performing administrative tasks.

Lead exposure monitoring was performed in accordance with the EPA method 600/R-93/200(M)-7420 (Atomic Absorption - Flame) with SKC personal air sampling pumps calibrated to 2.0 liters per minute. All samples were collected on 37 mm diameter cassettes with mixed-cellulose ester filters. All sampling pumps were calibrated before and after each use to ensure volume accuracy. Two (2) samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, Maryland. Analytical results of the lead wipe and air samples are attached to this report as Appendix B.

Army National Guard - Leeds Readiness Center *Lead Air Sample Results*									
Sample #	**Sample Type**	**Sample Location**	**Flow Rate**	**Start**	**Stop**	**Vol.**	**Reprt. Limit (µg/m³)**	**Results (µg/m³)**	**8 hr TWA (µg/m³)**
November 5, 2012									
Leeds RC-LA-1	FB	Field Blank	---	---	---	0	3	< 3	N/A
Leeds RC-LA-2	GA	Maintenance Bay 1	2.0	0848	1304	512	5.9	< 5.9	N/A
Leeds RC-LA-3	GA	Basement Stairwell	2.0	0920	1308	456	6.6	< 6.6	N/A

PS = Personal sample, G**A** = General Area, **N/A** = Not Applicable
Note: The OSHA PEL of 50 µg/m³ is averaged over an 8 hr work shift

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Leeds Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified a few areas of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling paint in the following areas:

- Approximately 10 ft² peeling grey paint in Maintenance Bay 1
- Approximately 20 ft² peeling beige paint in the basement Stairwell
- Approximately 4 ft² peeling beige paint in the basement Storage

Two (2) paint chip samples were collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. Analysis indicated that both of the peeling paints collected contained detectable levels of lead. The paints are therefore considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Leeds Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Leeds Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged

or visible mold problems. Bonus Environmental, LLC identified approximately 29 ft² of stained dropped-ceiling tiles (DCT) in the following locations:

- Approximately 15 ft2 of stained DCT in Dining area 108A;
- Approximately 13 ft2 of stained DCT in classroom 207;
- Approximately 1 ft2 of stained DCT in office 143A.

3.4 - Housekeeping
During the industrial hygiene evaluation of the Leeds Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Leeds Readiness Center facility in good order.

3.5 – Employee Interviews
During the industrial hygiene evaluation of the Leeds Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality
During the industrial hygiene evaluation of the Leeds Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 379 ppm to 530 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness,

disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 2.1 ppm to 6.2 ppm. CO levels were well below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Leeds Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 60.7ºF to 68.8ºF and are not considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Leeds Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 25.9% to 44.6%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Leeds Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, northwest side of building (cloudy)	379	6.2	21.8	**43.6**
Maintenance Bay 1	408	4.6	25.9	**62.3**
Office (143A)	384	4.5	39.4	**64.4**
Drill Hall	415	4.5	35.8	**64.0**
Dining Area (108A)	407	2.1	44.6	**60.7**
Fitness Area (117)	495	2.5	38.4	**63.3**
Office (203)	435	4.3	32.7	68.8
Classroom (207)	421	3.9	37.0	68.4
Office (220)	530	4.2	35.6	67.2
Library/Classroom/Learning Center (228)	494	4.1	38.0	**65.9**
Basement Storage	436	4.4	34.0	68.6

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Leeds Armory. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Leeds Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Maintenance Bay 1	21.8	75	No
Maintenance Bay 2	19.3	75	No
Maintenance Bay 3	29.3	75	No
Drill Hall	28.4	30	No
Recruiter's Office (103)	Inaccessible		
Hallway (101)	10.1	5	Yes
Women's Restroom (105)	46.4	5	Yes
Recruiting Lounge (106)	14.5	10	Yes
Classroom (107A)	118.1	30	Yes
Dining Area (108A)	157.8	10	Yes
Kitchen (109)	66.2	50	Yes
Elevator Lobby (114)	103.7	10	Yes
Women's Restroom (124)	69.0	5	Yes
Men's Restroom (123)	67.5	5	Yes
Men's Shower (121)	53.6	7	Yes
Men's Locker Room (120)	41.3	7	Yes
Storage (115)	113.4	30	Yes
Classroom (116A)	42.8	30	Yes
Fitness Area (117)	43.8	30	Yes
Break Room (118)	57.4	10	Yes
Storage (126)	Inaccessible		
Boiler Room (129)	55.6	30	Yes
Storage (Former Indoor Firing Range)	10.9	30	No
Basement Stairwell	17.8	5	Yes
Basement Storage	12.7	30	No
Conference Room (202)	59.2	30	Yes
Office (203)	71.3	50	Yes
Office (204)	33.4	50	No
Office (205)	63.0	50	Yes
Office (206)	69.2	50	Yes
Hallway (214)	22.1	5	Yes
Women's Restroom/Shower (208)	44.6	5	Yes
Women's Locker Room	22.8	7	Yes
Men's Restroom (209)	32.3	5	Yes
Men's Shower	4.7	7	No
Classroom (207)	25.7	30	No
Janitor Supply Room (Telecommunications Room) (231)	55.8	30	Yes
Mechanical Room (230)	15.6	30	No
Elevator Lobby (215)	74.3	10	Yes
Machine Room (216)	35.8	75	No
Men's Restroom (229)	59.6	5	Yes
Office Lobby (218)	54.3	10	Yes
Copy Room (219)	56.7	10	Yes
Office (220)	55.1	50	Yes
Office (221)	68.2	50	Yes
Office (222)	50.8	50	Yes

Army National Guard – Leeds Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Office (223)	64.2	50	Yes
Conference Room (224)	57.5	30	Yes
Office (225)	10.6	50	No
Office (226)	66.8	50	Yes
Library/Classroom/Learning Center (228)	18.1	30	No
Office (143A)	57.0	50	Yes
Storage (145)	24.1	30	No
Storage (146	57.4	30	Yes
Storage (147)	49.2	30	Yes

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Leeds Readiness Center located at 2515 Route 23 in Leeds, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on November 5, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Leeds Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:
    - Drill Hall, on electrical panel box
    - Drill Hall, on fan on/off box
    - Storage (Former Indoor Firing Range), on heater grill
    - Storage (Former Indoor Firing Range), on light fixture
    - Maintenance Bay 2, on work table surface

2. Bonus Environmental, LLC identified three (3) areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified approximately 29 ft² of water stained dropped-ceiling tile.

5. Bonus Environmental, LLC found the housekeeping practices within Leeds Readiness Center in good order.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Leeds Readiness Center. All were found to be below or within their acceptable ranges/limits; with the exception of a several temperature measurements that were below required/recommended levels.

8. Areas within the Leeds Readiness Center facility were identified as improperly illuminated.

9. Air sampling for airborne lead dust indicated concentrations below the detection limit;

10. No Health and Safety policies were available for review at the Leeds Readiness Center.

11. The maintenance bays within the Leeds Readiness Center were not equipped with a vehicle exhaust system.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings,

conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

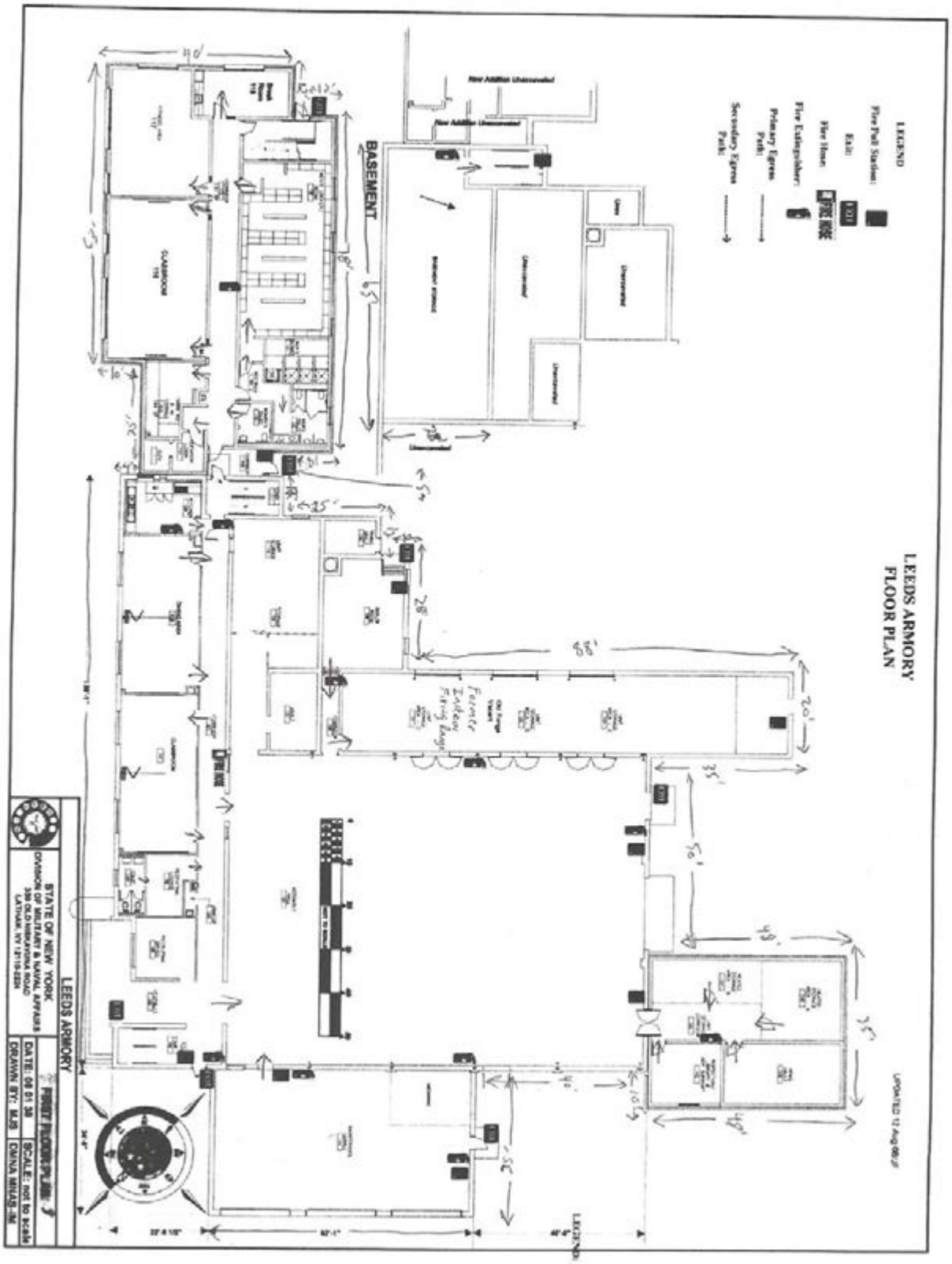
Non-Responsive

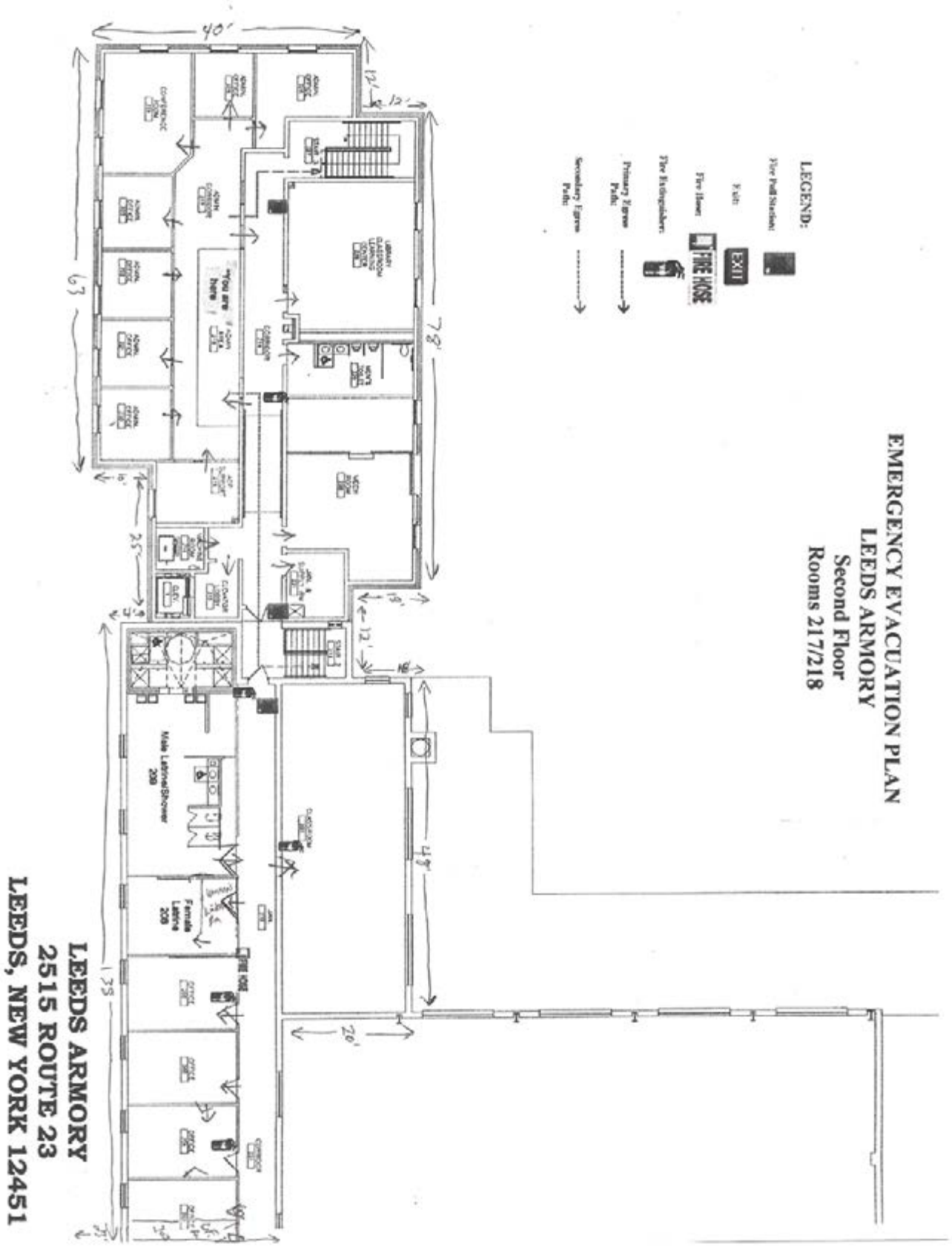
Principal
Bonus Environmental, LLC

Leeds RC_12_Report.docx

Appendix A

Shop Diagram and Air Flow Patterns





Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Leeds RC	Chain Of Custody:	514466
Address:	301-Ill Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	2515 Route 23, Leeds, NY 12451	Date Submitted:	11/12/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/16/2012 Report Date: 11/16/2012
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13014019	LeedsRC-LA-1	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
13014020	LeedsRC-LA-2	Flame	Air	512	N/A	5.9	ug/m³	<3	<5.9	ug/m³	
13014021	LeedsRC-LA-3	Flame	Air	456	N/A	6.6	ug/m³	<3	<6.6	ug/m³	
13014022	LeedsRC-PC-1	Flame	Paint Chip	****	N/A	0.0094	%Pb		0.42	%Pb	
13014023	LeedsRC-PC-2	Flame	Paint Chip	****	N/A	0.0065	%Pb		0.036	%Pb	
13014024	LeedsRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13014025	LeedsRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014026	LeedsRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014027	LeedsRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	2200	20000	ug/ft²	
13014028	LeedsRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	67	600	ug/ft²	
13014029	LeedsRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014030	LeedsRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014031	LeedsRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014032	LeedsRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014033	LeedsRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014034	LeedsRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014035	LeedsRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	16	150	ug/ft²	
13014036	LeedsRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	200	1800	ug/ft²	
13014037	LeedsRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	81	730	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory
4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Leeds RC	Chain Of Custody:	514466
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	2515 Route 23, Leeds, NY 12451	Date Submitted:	11/12/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/16/2012 Report Date: 11/16/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13014038	LeedsRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	360	3200	ug/ft²	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Analy Non-Responsive

Technical Manager: Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514466

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Leeds RC
2. Job Location: 2515 Route 23, Leeds NY 12451
3. Job #: 1061-15 PO #: W912K6-09-A-0003
4. Contact Person: [redacted] @ phone #
5. Submitted by: [redacted] ature: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS			REPORT TO:
☐ Immediate Date Due:	☐ Immediate	☐ 3 Day	☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day	☒ 5 Day +		☒ Email: [redacted] bonusenvironmental.com
Comments:	☐ 2 Day	Date Due: 11/19/12		☒ Fax: [redacted] us.army.mil
				☒ Verbals [redacted] us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)
TEM Air† – Please Indicate Filter Type:
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate ____ (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.6 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)
TEM Dust†
☐ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area) Dust D6480-99 ____ (QTY)
TEM Water
☐ Qual. (pres/abs) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples ____ °C)

Metals Analysis
☒ Pb Paint Chip 2 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 15 (QTY)
☒ *Pb Air 3 (QTY)
☐ Pb Soil/Solid ____ (QTY)
☐ Pb TCLP ____ (QTY)
☐ Drinking Water ☐ Pb ___(QTY) ☐ Cu ___(QTY) ☐ As ___(QTY)
☐ Waste Water ☐ Pb ___(QTY) ☐ Cu ___(QTY) ☐ As ___(QTY)
☐ Pb Furnace (Media ____) ____ (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ____
Collection Media ____
☐ *Spore-Trap ___ (QTY) ☐ Surface Vacuum Dust ___ (QTY)
☐ *Surface Swab ___ (QTY) ☐ Culturable ID Genus (Media ___) ___ (QTY)
☐ *Surface Tape ___ (QTY) ☐ Culturable ID Species (Media ___) ___ (QTY)
☐ Other (Specify ___) ___ (QTY)

CLIENT ID #	SAMPLE LOCATION/ID	DATE/TIME	VOL (L)/Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
Leeds RC-LA-1	Field Blank	11/5					*		*							Date/Time: Contact: By:
Leeds RC-LA-2	Maintenance Bay 1						*		*							
Leeds RC-LA-3	basement Stairwell						*		*							
*SEE ATTACHED FIELD DATA SHEETS		*					*				*					
Leeds RC-PC-1	Maintenance Bay 1	↓					*			*						Date/Time: Contact: By:
Leeds RC-PC-2	Basement Stairwell	↓					*			*						
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 11 / 12 / 12 @ 1000 Via: FedEx By (Pr [redacted]
2. Date/Time Analyzed: ___ / ___ / ___ @ ___ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ___ / ___ / ___ Time: ____ Initials: ____
4. Comments: 7938 2458 5590

Surface Sampling Field Data Sheet

Date Collected: 11-5-12
Job Number: 1061-15
Contact Person: [redacted]

Job Name: Leeds RC
Job Location:
Address: 2515 Route 23, Leeds NY 12451

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: [redacted]
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Leeds RC-LW-1	Field Blank	———	———	Ghost wipe
Leeds RC-LW-2	Drill Hall	Floor, NE end	4"x4"	↓
Leeds RC-LW-3	Drill Hall	Floor, SW end	↓	↓
Leeds RC-LW-4	Drill Hall	On electrical panel box	↓	↓
Leeds RC-LW-5	Drill Hall	On Fan On/OFF Box	↓	↓
Leeds RC-LW-6	Drill Hall	On table surface	↓	↓
Leeds RC-LW-7	Kitchen	On top of microwave	↓	↓
Leeds RC-LW-8	Break Room (118)	On window sill	↓	↓
Leeds RC-LW-9	Storage (115)	On Supply Air Grill	↓	↓
Leeds RC-LW-10	Mechanical Rm (230), HVAC System	On Fan side	↓	↓
Leeds RC-LW-11	Mechanical Rm (230), HVAC System	On Supply Side	↓	↓
Leeds RC-LW-12	Storage (Former Indoor Firing Range)	Floor, Bullet Trap Area	↓	↓
Leeds RC-LW-13	Storage (Former Indoor Firing Range)	On Heater grill	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-5-12
Job Number: 1061-15
Contact Person: [redacted]

Job Name: Leeds RC
Job Location:
Address: 2515 Route 23, Leeds NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By:
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Leeds RC-LW-14	Storage (Former Indoor Firing Range)	On light fixture	4" x 4"	Ghost wipe
Leeds RC-LW-15	Maintenance Bay 2	On work table surface	↓	↓

Please Return Samples To:
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Air Sampling Field Data Sheet

Date Collected: 11-5-12
Job Number: 1061-15
Contact Person: Non-Responsive
Job Name: Leeds RC
Job Location:
Address: 2515 Route 23, Leeds NY 12451

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Type (IWA, OWA, FC, ENV, PER, AMB, BLK, etc.)	Sample Location	Sampling Pump Data					Comments (for mold samples, must indicate sampling apparatus and/or collection media)
			Time On	Time Off	Total Min.	Flow Rate LPM	Volume L	
Leeds RC-LA-1	FB	Field Blank	—	—	∅	∅	∅	
Leeds RC-LA-2	GA	Maintenance Bay 1	0848	1304	256	2.0	512	
Leeds RC-LA-3	GA	Basement Stairwell	0920	1308	228	2.0	456	

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Photographs

Building exterior, looking south

Maintenance bays, looking southwest

Maintenance bay 1, flammables cabinet

Maintenance bay 1, emergency eyewash station

Maintenance bay 1, peeling gray paint

Drill hall, looking southwest

Boiler room

Former indoor firing range

Basement stairwell, peeling beige paint

Kitchen

Classroom 207, stained dropped-ceiling tile

Mechanical room 230

Appendix D

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

9 JUNE 2006

MEMORANDUM FOR Region North Industrial Hygiene Office (NGB-AVS-SI-IH/ Ms. Vanessa Franchere), Army National Guard Bureau, 301-IH Old Bay Lane, Havre de Grace, MD 21078

SUBJECT: New York Army National Guard Facilities, Industrial Hygiene Survey, Report No. 55-ML-048L-05/06, Morrisonville Armory, Morrisonville, New York, 31 October 2005

1. We are enclosing a copy of the subject report with an Executive Summary.

2. Our point of contact is Mr. Non-Responsive at commercial (410) 436-5475/3118, DSN 584-5475/3118 or electronic mail: Non-Responsive@us.army.mil

FOR THE COMMANDER:

Non-Responsive

Director, Occupational Health Sciences

Encl

CF:
USACHPPM-NORTH (MCHB-AN-IH/MR. Non-Responsive)

Readiness thru Health

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U.S. Army Center for Health Promotion and Preventive Medicine

USCHPPM

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/06
NEW YORK ARMY NATIONAL GUARD FACILITIES
MORRISONVILLE ARMORY
MORRISONVILLE, NY
31 OCTOBER 2005

Distribution limited to U.S. Government Agencies only. Requests for this document must be referred to Region North Industria[redacted] (NGB-AVS-SI-IH/Ms. Non-Responsive), Army[redacted]reau, 301-IH Old Bay Lane, Havre de Grace, MD 21078

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

Readiness Thru Health

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U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/06
NEW YORK ARMY NATIONAL GUARD FACILITIES
MORRISONVILLE ARMORY
MORRISONVILLE, NY
31 OCTOBER 2005

1. PURPOSE. To conduct surveys at the Morrisonville, New York Army National Guard (NYARNG) facility to identify and measure the existence and extent of potentially hazardous operations or conditions.

2. CONCLUSIONS.

a. Lead Exposure. Levels of lead in dust that exceeded safe limits for adults and children were identified. These levels may result in health hazards to adults and to children visiting the Armory. Personnel working in the Armory may have been tracking dust containing lead throughout the facility. Cleaning areas with elevated levels of lead in dust may further prevent lead from becoming redistributed throughout the Armory.

b. Asbestos. The building's construction date (1986) indicated that it was unlikely that asbestos-containing building materials (ACBM) were used during construction. No suspected ACBM were identified.

c. Safety and Occupational Health Programs. The Morrisonville Armory did not have written Hazard Communication (HAZCOM) or Hearing Conservation Programs.

d. Heating, Ventilation, and Air Conditioning (HVAC) Systems. There was no maintenance program in place for the HVAC system.

e. Lighting. In the professional judgment of the project lead, the lighting levels were adequate.

f. Indoor Air Quality (IAQ). IAQ parameters in the facility met American Society of Heating, Refrigeration, and Air-conditioning Engineers guidelines.

3. RECOMMENDATIONS.

a. Lead Exposure. Health Risk Assessment Code (RAC) 3 for child exposures. Health RAC 4 for adult exposures. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the indoor firing range storage area to the Environmental Protection Agency and State of New York lead in dust standards for young children, and clean other horizontal surfaces in the vault to the National Guard Bureau Region North and US Army Center for Health Promotion and Preventive Medicine recommended maximum level for lead in dust on frequently contacted surfaces. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when working in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. No recommendation is required.

c. Safety and Occupational Health Programs. Health RAC 3. Develop written HAZCOM and Hearing Conservation Programs specific to the Morrisonville Armory. Include annual program evaluation and training.

d. HVAC Systems. Health RAC 4. Develop and implement an HVAC maintenance program. Include provisions for regularly scheduled filter replacement and documentation of maintenance performed.

e. Lighting. Health RAC 5. Quantify light levels in follow-on assessments.

f. Indoor Air Quality. Health RAC 5. No recommendation is required.

NYARNG, IH Survey, Morrisonville Armory, Morrisonville, NY, Report No. 55-ML-048L-05/06, 31 October 2005

CONTENTS

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/06
NEW YORK ARMY NATIONAL GUARD FACILITIES
MORRISONVILLE ARMORY
MORRISONVILLE, NY
31 OCTOBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE. To conduct surveys at the Morrisonville, New York Army National Guard (NYARNG) facilities to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Fax, National Guard Bureau Region North Industrial Hygiene Office (NGB-AVS-SI-IH/Ms. Non-Responsive), 27 July 2005, subject: SAB.

4. BACKGROUND.

a. Date of Construction. The construction date was 1986.

b. Armory Use by Children. Mr. Non-Responsive, Building Superintendent, stated that children did not visit the facility regularly.

c. Size of Facility. The facility is approximately 30,000 square feet It is a one story building.

d. Mission. Support activities for the 108th Infantry, 2nd Battalion.

e. Point Of Contact (POC). The POC was Mr. Non-Responsive Facilities Management Supervisor, 330 Old Niskayuna Road, Latham, NY, 12110-2224, Phone: 518-786-4552.

5. FACILITY EVALUATION.

a. Sampling. Surface lead in dust and air sampling were conducted to determine the existence of lead hazards. Results are shown in Appendix B.

b. Physical Condition of Facilities.

(1) Paint. The date of construction of the facility indicated that the use of lead in paint was unlikely.

(2) Asbestos. Mr. Non-Responsive reported that no asbestos containing building material had been used in the Armory to his knowledge. The building's construction date (1986) indicated that it was unlikely that asbestos-containing building materials (ACBM) were used during construction. No suspected ACBM were identified.

(3) Mold and Moisture Problems. No mold or moisture problems were observed or reported.

(4) Building Physical Condition. The building was in good condition and had been well maintained. No chipping or deteriorating paint was observed.

c. Safety and Occupational Health Programs. There was a Safety Standard Operating Procedure but there were no formal Hazard Communication (HAZCOM) or Hearing Conservation Programs. No annual training was conducted.

d. Heating, Ventilation, and Air Conditioning (HVAC) Systems. The building assessment was based upon recommended design criteria. The building utilized a central heating and air conditioning system. The building superintendent reported that a written HVAC maintenance program was being developed. The HVAC filtering systems were individually tagged with the date of replacement and the next scheduled maintenance date written on each.

e. Noise Dosimetry. No operations with the potential to generate hazardous noise levels were identified.

f. Lighting. The scope of work for this survey called for measurement of lighting levels in areas where there may have been a potential problem, based on professional judgment. The National Guard Bureau (NGB) verbally requested that light levels be measured throughout facilities. Due to miscommunication, the project lead visiting this site did not quantify light levels, but did use professional judgment in assessing the lighting levels. All areas were visually judged to be adequately lit.

g. Indoor Air Quality (IAQ). The IAQ assessment included measuring temperature in degrees Fahrenheit (^{O}F), relative humidity (RH) in percent (%), and carbon dioxide (CO_2) levels in parts per million (ppm) in different locations throughout the facility.

h. Other Building Concerns. None.

6. ASSESSMENT CRITERIA FOR LEAD. See Appendix C.

a. Lead in Air. The Army complies with the Occupational Safety and Health Administration (OSHA) 8-hour time-weighted average Permissible Exposure Limit of 50 micrograms of lead per cubic meter (µg/m³) of air.

b. Lead in Dust. The Environmental Protection Agency (EPA) and State of New York limits for lead in dust are 40 micrograms per square foot (µg/ft^2) on floors, 250 µg/ft^2 on window sills, and 400 µg/ft^2 in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year**.** The US Army Center for Health Promotion and Preventive Medicine (USACHPPM) applies these limits to areas of Army National Guard facilities that children may occupy, regardless of the amount of time that children occupy them. The NGB Region North concurs with the USACHPPM recommended maximum level of 200 µg/ft^2 on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA/State standards. This limit was adopted from OSHA guidance in Compliance Letter 02-02-58.

c. Lead in Paint. Paint containing lead levels of 0.5 percent or more by weight in dried solid (also reported as 5000 milligrams per kilogram) is considered to be lead-based paint according to both Federal and New York State Regulations.

d. Lead Carcinogenicity. The Department of Health and Human Services National Toxicology Program (NTP) released the Report on Carcinogens, Eleventh Edition in February 2005. The NTP report lists “lead and lead compounds” as “reasonably anticipated to be human carcinogens”.

7. SAMPLING RESULTS, DISCUSSION, AND CONCLUSIONS.

a. Lead in Dust. Lead in dust sample locations and analytical results are shown in Appendix B. Sample results greater than 40 µg/ft² for floors or 200 µg/ft² for other surfaces are highlighted. One of the lead in dust sample results exceeded the EPA and the State of New York lead exposure standard for children. These levels are hazardous to children exposed to lead dust through physical contact, inhalation, or ingestion of lead dust while visiting the Armory. Personnel working in this room were potentially exposed to lead, and were possibly tracking lead out of the area and redistributing it into adjacent rooms in the Armory. This can result in lead exposures for the general workforce and for children visiting this facility.

b. Lead in Air. General area lead in air sampling was conducted in Classroom A, the indoor firing range (IFR) and the Drill Hall (which also serves as a dining area). The air sample results were less than the laboratory reporting limit of 7 µg/m³, as well as the OSHA standard of 50 µg/m³ for lead in air over an 8 hour day.

c. IAQ. Table 1 summarizes IAQ measurements.

Table 1. Indoor Air Quality Measurements

Location	CO_2 (ppm)	Temp (°F)	RH (%)
Outdoors	380	48	52
Drill Hall	415	62	48
Classroom 1	450	64	47
IFR	420	60	48

(1) Temperature. The indoor temperatures of all but one of the rooms sampled were within the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), Inc. recommended guidelines of 62-72° F for an acceptable thermal environment. These measurements were taken at approximately 0700 before the building's indoor temperatures might have reached optimum temperatures. The room with the low temperature, the IFR, is in an unoccupied section of the building.

(2) Carbon Dioxide (CO_2). The outdoor CO_2 level was 380 ppm. The ASHRAE recommends, for occupant comfort, maintaining CO_2 levels below the value of 700 ppm plus the outdoor ambient level. Therefore, CO_2 levels should be maintained below 1080 ppm. The CO_2 levels of all rooms measured were well within the ASHRAE recommended guidelines.

(3) RH. The RH levels in all rooms tested were within the ASHRAE recommended guidelines of 30-60 percent RH.

8. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Lead Exposure. Health RAC 3 for child exposures. Health RAC 4 for adult exposures. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the IFR storage area to the EPA lead in dust

NYARNG, IH Survey, Morrisonville Armory, Morrisonville, NY, Report No. 55-ML-048L-05/06, 31 October 2005

North and USACHPPM recommended maximum level for lead in dust on frequently contacted surfaces. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when working in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. No recommendation is required.

c. Safety and Occupational Health Programs. Health RAC 3. Develop written HAZCOM and Hearing Conservation Programs specific to the Morrisonville Armory . Include annual program evaluation and training.

d. HVAC systems. Health RAC 4. Develop and implement a HVAC maintenance program . Include provisions for regularly scheduled filter replacement and documentation of maintenance performed.

e. Lighting. Health RAC 5. Quantify light levels in follow-on assessments.

f. IAQ. Health RAC 5. No recommendation required

9. PHOTOGRAPHS. See Appendix D.

10. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report, please contact the undersigned at DSN 584-3118, commercial 410-436-3118, or by electronic mail: Non-Responsive @us.army.mil

Non-Responsive

Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive

Program Manager
Industrial Hygiene Field Services Program

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APPENDIX A

REFERENCES

Literature Cited

1. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), current ed. 1910.1025, Lead. http://www.osha.gov/comp-links.html

2. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), current ed. 1910.1200, Hazard Communication. http://www.osha.gov/comp-links.html

3. DA PAM 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://www.usapaarmy.mil/pdfiles/p40-501.pdf

4. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality. http://www.ashrae.org

5. EPA 40 CFR Part 745, Lead; Identification of Dangerous Levels of Lead; Final Rule, 5 Jan 2001.

6. Department of Health and Human Services National Toxicology Program (NTP) Substance Profiles, Report on Carcinogens, 11th Edition, Lead and Lead Compounds (CAS No. 7439-92-1) February 2005.

7. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, 19 August 1998. http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

8. OSHA Directive CPL 02-02-58, Lead Exposure in Construction; Interim Final Rule – Inspection and Compliance Procedures, December 13, 1993.

9. Environmental Protection Agency, Title 40 CFR, Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart M-National Emission Standard for Asbestos.

10. OSHA Directive CPL 02-02-58, Lead Exposure in Construction; Interim Final Rule – Inspection and Compliance Procedures, December 13, 1993.

APPENDIX B

Lead in Surface Dust Locations and Analytical Results.

Wipe Sample Number	Location of Samples	Result (µg/ft²)
MVW-01	IFR-Bullet Trap Area Floor	760
MVW-02	IFR – Storage	19
MVW-03	IFR – Storage	120
MVW-04	IFR – Door Outside	<2.7
MVW-06	Drill Hall – NW Corner	28
MVW-07	Drill Hall – NE Corner	7.5
MVW-08	Drill Hall – SE Corner	11
MVW-09	Drill Hall – SW Corner	22
MVW-10	Drill Hall – Center	3.9
MVW-12	Supply Room	25
MVW-13	Kitchen Oven	160
MVW-14	Classroom A	8.6
MVW-16	Community Room	4.1
MVW-17	Counter Drug Program Room 29	7.4
MVW-18	Briefing Room, Room 33	4.1
MVW-19	Orderly Room, Room 4	8.7
MVW-21	1st Sergeant's Office	9.7
MVW-22	Vault	11

Lead in Air Locations and Analytical Results.

Air Sample Number	Location of Samples	Result (µg/m³)
MVA-01	IFR	<6.2
MVA-02	Drill/Dining Hall	<6.2
MVA-03	Classroom A	<6

NYARNG, IH Survey, Morrisonville Armory, Morrisonville, NY, Report No. 55-ML-048L-05/06, 31 October 2005

APPENDIX C

SUBJECT: National Guard Bureau Region North Industrial Hygiene Office Proposed Recommendations for Surface Lead in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

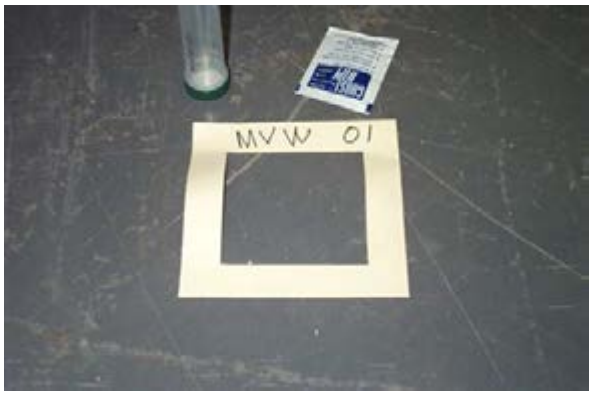
d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

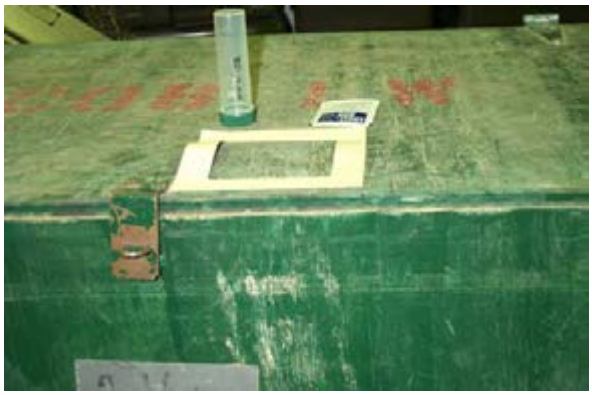
3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,

NYARNG, IH Survey, Morrisonville Armory, Morrisonville, NY, Report No. 55-ML-048L-05/06, 31 October 2005

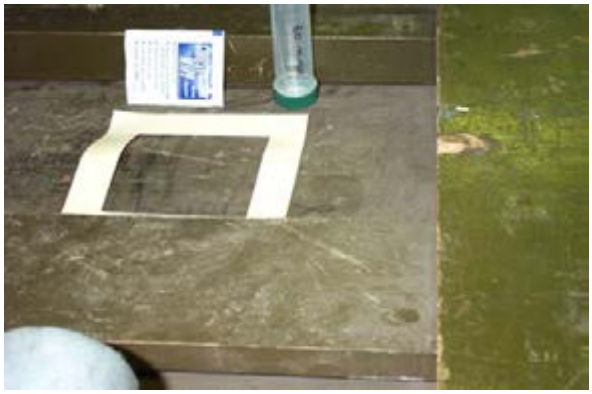
APPENDIX D



IFR – Bullet Trap Area Floor



IFR - Storage



IFR – Storage

IFR – Outside Door

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NYARNG, IH Survey, Morrisonville Armory, Morrisonville, NY, Report No. 55-ML-048L-05/06, 31 October 2005

Drill Hall – NW corner

Drill Hall – NE corner

NYARNG, IH Survey, Morrisonville Armory, Morrisonville, NY, Report No. 55-ML-048L-05/06, 31 October 2005

Drill Hall – SE corner

Drill Hall – SW corner

Drill Hall – center

Supply room

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NYARNG, IH Survey, Morrisonville Armory, Morrisonville, NY, Report No. 55-ML-048L-05/06, 31 October 2005

Kitchen – oven top

Classroom A

Community room

Room 29

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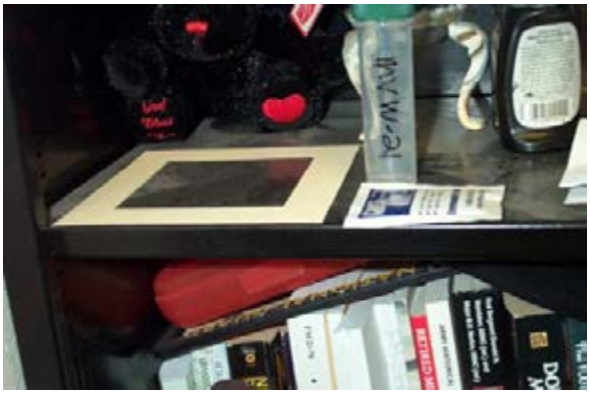
NYARNG, IH Survey, Morrisonville Armory, Morrisonville, NY, Report No. 55-ML-048L-05/06, 31 October 2005

Briefing Room 33

Orderly room 4



1st Sergeant's Office

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Morrisonville Readiness Center
Morrisonville, NY

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 25, 2013

Bonus Environmental, LLC

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APPENDICES

January 25, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Morrisonville Readiness Center, Morrisonville, NY

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Morrisonville Readiness Center located at 16 Fairgrounds Road in Morrisonville, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 9, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Morrisonville Readiness Center is an Army National Guard armory comprised of offices, storage rooms, a drill hall, a classroom, a break room, locker rooms, a fitness room, a kitchen, and a former indoor firing range (currently used as storage). The Morrisonville Readiness Center was constructed in the 1970's. The point of contact for the approximately 21,821 ft² Morrisonville Readiness Center is Mr. Non-Responsive. Approximately nine (9) full-time administrative personnel are employed at the Morrisonville Readiness Center. No Health and Safety programs were available to review on site. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Eighteen (18) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Morrisonville Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
MvilleRC-LW-1	11-9-12	Field Blank	---	< 12 μg
MvilleRC-LW-2	11-9-12	Drill hall, NW corner, top of amnesty box	0.111	150
MvilleRC-LW-3	11-9-12	Drill hall, west wall, top of emergency lighting fixture	0.111	1,300
MvilleRC-LW-4	11-9-12	Drill hall, NE corner, top of vending machine	0.111	< 110
MvilleRC-LW-5	11-9-12	Drill hall, north end, on floor	0.111	< 110
MvilleRC-LW-6	11-9-12	Drill hall, south end, on floor	0.111	< 110
MvilleRC-LW-7	11-9-12	Kitchen, top of microwave oven	0.111	< 110
MvilleRC-LW-8	11-9-12	Room 28, Gym, SE corner, on window sill	0.111	< 110
MvilleRC-LW-9	11-9-12	Break room, on counter surface	0.111	< 110
MvilleRC-LW-10	11-9-12	Classroom B, NW corner, top shelf of bookshelf	0.111	< 110
MvilleRC-LW-11	11-9-12	Room 33, Briefing room, east wall, on heat register	0.111	< 110
MvilleRC-LW-12	11-9-12	Room 4, Orderly room, SW corner, top of file cabinet	0.111	< 110
MvilleRC-LW-13	11-9-12	Room 8, Commander's office, top of bookshelf	0.111	< 110
MvilleRC-LW-14	11-9-12	Room 13, Men's locker room 2, on supplied air grill	0.111	170
MvilleRC-LW-15	11-9-12	Storage room, top of light fixture	0.111	590
MvilleRC-LW-16	11-9-12	Room 39, top of locker #96	0.111	< 110
MvilleRC-LW-17	11-9-12	Room 44 (former indoor firing range), south end, on floor	0.111	220
MvilleRC-LW-18	11-9-12	Room 44 (former indoor firing range), north end, on floor	0.111	< 110
MvilleRC-LW-19	11-9-12	Room 44 (former indoor firing range), center of room,	0.111	1,100

Army National Guard – Morrisonville Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
		top of light fixture		

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range was being used for storage. It was stated to Bonus Environmental, LLC that it had been remediated of residual lead contamination at some point in the past (date or year unknown), and it is uncertain if it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Morrisonville Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC did not identify damaged or peeling paint in the Morrisonville Readiness Center.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Morrisonville Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Morrisonville Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified water-damaged and/or moldy building materials in the following locations:

- Approximately 8 ft^2 of stained dropped-ceiling tile (DCT) in room 28 (gym);
- Approximately 6 ft^2 of stained DCT in Classroom B;
- Approximately 1 ft^2 of stained DCT in room 32 (office);
- Approximately 2 ft^2 of water-damaged drywall ceiling in room 22 (dishwashing room);
- Approximately 1 ft^2 of stained DCT in Room 33 (Briefing room);
- Approximately 1 ft^2 of stained DCT in room 4 (Orderly room);
- Approximately 20 ft^2 of water-damaged cement blocks in room 44 (storage/former indoor firing range).

3.4 - Housekeeping

During the industrial hygiene evaluation of the Morrisonville Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the

housekeeping practices within Morrisonville Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Morrisonville Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and/or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Morrisonville Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 367 ppm to 742 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 0.0 ppm to 0.6 ppm. CO levels were well below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Morrisonville Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 54.9ºF to 71.8ºF and are considered to be outside of an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Morrisonville Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 26.3% to 44.6%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Morrisonville Readiness Center Indoor Air Quality Measurements				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, east side of building (sunny)	377	0.0	32.2	41.1
Room 28, gym	397	0.0	26.3	**64.8**
Break room	411	0.0	30.2	**63.3**
Classroom B	429	0.2	28.3	**62.1**
Room 33, Briefing room	395	0.0	30.6	**61.9**
Kitchen	393	0.6	29.2	**59.5**
Room 4, Orderly room	742	0.6	30.1	71.8
Room 8, Commander's office	407	0.0	28.1	**60.8**
Room 13, Men's locker room 2	419	0.0	35.4	**59.5**
Room 44, storage/former indoor firing range	367	0.0	44.6	**54.9**
Drill Hall	400	0.0	30.7	**59.9**

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Morrisonville Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Morrisonville Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Community room 28 (gym)	45.6	30	Yes
Break room	50.3	10	Yes
Classroom B	38.7	30	Yes
Room 29	Inaccessible		
Room 30 (storage)	31.8	30	Yes
Room 31	Inaccessible		
Room 32 (office)	60.2	50	Yes

Army National Guard – Morrisonville Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Room 21 (kitchen)	34.1	50	No
Room 23 (kitchen storage)	36.7	30	Yes
Room 22 (dishwashing room)	15.8	30	No
Room 33 (Briefing room/classroom)	66.3	30	Yes
Hallway	11.7	5	Yes
Room 20 (janitor's closet)	15.8	30	No
Women's restroom	50.1	5	Yes
Men's restroom	34.7	5	Yes
Lobby	17.2	10	Yes
Room 34 (office)	Inaccessible		
Recruiter's office	113.4	50	Yes
Room 12	Inaccessible		
Room 12A	Inaccessible		
Room 4 (orderly room)	126.1	50	Yes
Room 5 (office)	49.0	50	No
Room 6 (office)	52.1	50	Yes
Room 6A (copy room)	69.3	10	Yes
Room 9 (Boiler room)	Inaccessible		
Room 8 (office)	23.2	50	No
Men's shower	11.1	7	Yes
Men's locker room 1	20.2	7	Yes
Men's locker room 2	17.7	7	Yes
Storage room	19.8	30	No
Room 38 (Supply)	34.6	30	Yes
Room 38A (vault)	Inaccessible		
Drill Hall	19.0	30	No
Room 39 (storage)	7.0	30	No
Room 41 (restroom)	31.4	5	Yes
Room 40 (elec room)	Inaccessible		
Room 44 (storage/former indoor firing range)	32.4	30	Yes
Flammables room (storage)	Inaccessible		

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Morrisonville Readiness Center located at 16 Fairgrounds Road in Morrisonville, NY.

The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 9, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

2. Bonus Environmental, LLC found the housekeeping practices within the Morrisonville Readiness Center in good order, with the exception of residual lead dust concentrations.

3. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

4. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Morrisonville Readiness Center. All were found to be within their acceptable ranges/limits, with the exception of several low temperature reading.

5. Areas within the Morrisonville Readiness Center facility were identified as improperly illuminated.

6. Lead wipe sample results collected within the Morrisonville Readiness Center were above the OSHA interpretive level of 200 µg/ft² in four sampled locations.

7. Bonus Environmental, LLC did not identify any areas of peeling paint.

8. Bonus Environmental, LLC identified water-damaged and/or moldy building materials in seven locations.

9. No Health and Safety programs were available to review on site.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The

information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

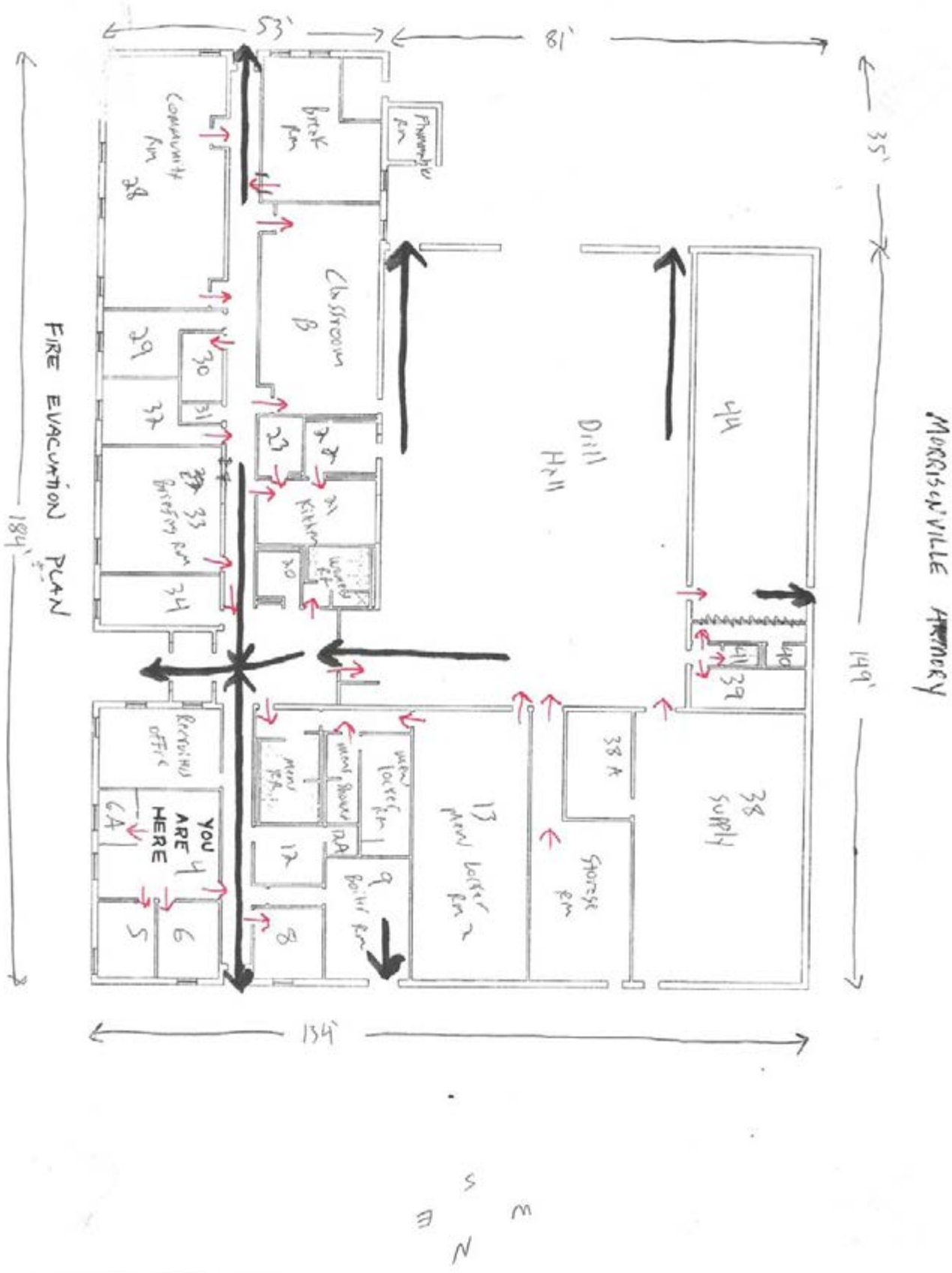
Non-Responsive

Principal
Bonus Environmental, LLC

Morrisonville RC_12_Report.docx

Appendix A

Shop Diagram and Air Flow Patterns


FIRE EVACUATION PLAN
MORRISONVILLE ARMORY
53'
81'
35'
149'
134'
184'
Drill Hall
Classroom B
Community Room
Break Room
Pharmacy
Kitchen
Dressing Room
Men's Locker Room
Men's Shower
Men's Toilet
Boiler Room
Storage Room
Supply
Recruiting Office
YOU ARE HERE
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Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAP, LLC #100470

Client:	National Guard Bureau	**Job Name:**	Morrisonville RC	**Chain Of Custody:**	514483
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-F, State Military Reservation	**Job Location:**	Morrisonville, NY	**Date Submitted:**	11/12/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/19/2012 **Report Date:** 11/19/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13014205	MvilleRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13014206	MvilleRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	16	150	ug/ft²	
13014207	MvilleRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	150	1300	ug/ft²	
13014208	MvilleRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014209	MvilleRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014210	MvilleRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014211	MvilleRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014212	MvilleRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014213	MvilleRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014214	MvilleRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014215	MvilleRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014216	MvilleRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014217	MvilleRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014218	MvilleRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	19	170	ug/ft²	
13014219	MvilleRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	65	590	ug/ft²	
13014220	MvilleRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014221	MvilleRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	24	220	ug/ft²	
13014222	MvilleRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13014223	MvilleRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft²	120	1190	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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LAP, #100470

Client:	National Guard Bureau	Job Name:	Morrisonville RC	Chain Of Custody:	514483
Address:	301-H Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Morrisonville, NY	Date Submitted:	11/12/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/19/2012 Report Date: 11/19/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Anal Non-Responsive

Technical Manage Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514483

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Morrisonville RC
2. Job Location: Morrisonville, NY
3. Job #: 10K-15 P.O. #: W912K6-09-A-0003
4. Contact Pers[redacted] @[redacted]
5. Submitted by[redacted] ture:[redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day[redacted]on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Incl[redacted]h Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Ema[redacted]conusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/16/12	☒ Fax:[redacted]us.army.mil
	☐ Results Required By Noon	☒ Verb[redacted]us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
- ☐ NIOSH 7400 _____ (QTY)
- ☐ Fiberglass _____ (QTY)

TEM Air* – Please Indicate Filter Type:
- ☐ AHERA _____ (QTY)
- ☐ NIOSH 7402 _____ (QTY)
- ☐ Other (specify _____) _____ (QTY)

PLM Bulk
- ☐ EPA 600 – Visual Estimate _____ (QTY)
- ☐ EPA Point Count _____ (QTY)
- ☐ NY State Friable 198.1 _____ (QTY)
- ☐ Grav. Reduction ELAP 198.6 _____ (QTY)
- ☐ Other (specify _____) _____ (QTY)

MISC
- ☐ Vermiculite
- ☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
- ☐ ELAP 198.4/Chatfield _____ (QTY)
- ☐ NY State PLM/TEM _____ (QTY)
- ☐ Residual Ash _____ (QTY)

TEM Dust*
- ☐ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
- ☐ Quan. (s/area) Dust D6480-99 _____ (QTY)

TEM Water
- ☐ Qual. (pres/abs) _____ (QTY)
- ☐ ELAP 198.2/EPA 160.2 _____ (QTY)
- ☐ EPA 100.1 _____ (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples _____ °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
- ☐ Pb Paint Chip _____ (QTY)
- ☒ *Pb Dust Wipe (wipe type: Ghost) 19 (QTY)
- ☐ *Pb Air _____ (QTY)
- ☐ Pb Soil/Solid _____ (QTY)
- ☐ Pb TCLP _____ (QTY)
- ☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
- ☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
- ☐ Pb Furnace (Media _____) _____ (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
- ☐ *Spore-Trap ____ (QTY)
- ☐ *Surface Swab ____ (QTY)
- ☐ *Surface Tape ____ (QTY)
- ☐ Surface Vacuum Dust ____ (QTY)
- ☐ Culturable ID Genus (Media ____) ____ (QTY)
- ☐ Culturable ID Species (Media ____) ____ (QTY)
- ☐ Other (Specify ____) ____ (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER/ OTHER	SPORE TRAP	TAPE	SWAB
*	SEE ATTACHED FIELD DATA SHEETS	*					*				*				

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time: Contact: By:

Date/Time: Contact: By:

Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11/12/12 @ 1100 Via: Fed Ex By (Print): [redacted] Sign: [redacted]
2. Date/Time Analyzed: ____/____/____ @ ____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____/____/____ Time: _____ Initials: _____
4. Comments: 7930 3495 5590

Surface Sampling Field Data Sheet

Date Collected: 11-9-12
Job Number: 1061-15
Contact Per: Non-Responsive

Job Name: Morrisonville RC
Job Location: 16 Fairgrounds Rd
Address: Morrisonville, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
MvilleRC-LW-1	Field Blank	—	—	Ghost wipe
-2	Drill Hall	NW corner, top of fluorescent fixture	4"x4"	
-3	Drill Hall	West wall, top of emergency lighting fixture		
-4	Drill Hall	NE corner, top of vending machine		
-5	Drill Hall	Floor, North end		
-6	Drill Hall	Floor, South end		
-7	Kitchen	top of microwave oven		
-8	Rm 28 Gym	SE corner, on window sill		
-9	Break Rm	on counter surface		
-10	Classroom B	NW corner, top shelf of bookshelf		
-11	Rm 33 Briefing Rm	east wall, on heat register		
-12	Rm 4 orderly Rm	SW corner, top of file cabinet		
-13	Rm 8 commander/ office	top of bookshelf		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-9-12
Job Number: 1061-15
Contact Per: Non-Responsive

Job Name: Morrisonville RC
Job Location: 16 Fairgrounds Rd
Address: Morrisonville, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (In^2/ft^2)	Collection Media
MvilleRC-LW-14	Rm 13 Mens Locker Rm 2	Supplied Air grill	4"x4"	Ghost wipe
-15	Storage Rm	top of light Fixture		
-16	Rm 39	top of Locker 96		
-17	Rm 44 former Indoor Firing Range	Floor, South end		
-18		Floor, North end		
-19		center of Room, top of Light fixture		

Please Return Samples To:
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Appendix C

Photographs

Building exterior, east entrance

Room 28, gym

Room 28, gym, water-stained dropped-ceiling tile

Break room

Kitchen

Room 22, dishwashing room, water-damaged drywall ceiling

Lobby

Room 44, former indoor firing range

Drill Hall

Drill hall, flammables cabinet

Appendix D

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

14. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

15. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

16. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

17. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

Consolidated Safety Services

The New York State Armory
Ogdensburg, New York 13669

Submitted to:

National Guard Region North
Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

NATIONAL GUARD ARMORY
INDUSTRIAL HYGIENE EVALUATION

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The New York State Armory
Ogdensburg, New York

Industrial Hygiene Evaluation

Prepared for:

National Guard Region North Industrial Hygiene Office
Havre de Grace, Maryland 21078

Prepared by:

Consolidated Safety Services, Inc.
10301 Democracy Lane, Suite 300
Fairfax, Virginia 22030

July 8, 2008

Prepared by: _____

Non-Responsive
Industrial Hygienist

Reviewed by: _____

Non-Responsive, CIH, CSP
Senior Project Manager, EHS

TABLE OF CONTENTS

Tables

Appendices

1. EXECUTIVE SUMMARY

Consolidated Safety Services, Inc. (CSS) contracted with the U.S. Army National Guard to perform an industrial hygiene evaluation at the New York State Armory located at 225 Elizabeth Street in Ogdensburg, New York 13669. Non-Responsive performed the evaluation on July 8, 2008. The point of contact for the facility was Mr Non-Responsive, Maintenance Assistant. The purpose of the evaluation was to assess industrial hygiene concerns in the facility, evaluate workers' personal exposures, and review industrial hygiene and safety programs.

The following industrial hygiene and safety programs were evaluated during the site visit: confined space, hearing conservation, respiratory protection, hazard communication (HAZCOM), and personal protective equipment (PPE).

The following industrial hygiene concerns were evaluated during the site visit:

- Noise exposure;
- Illumination;
- Deteriorated suspect lead-based paints;
- Damaged suspect asbestos-containing materials;
- Water damage and possible mold growth;
- General housekeeping;
- Indoor air quality; and
- Ergonomics.

There were several industrial hygiene concerns identified during the assessment. The Risk Assessment Code (RAC) is presented for each identified concern or deficiency:

- There was visual evidence of minor water damage to several 2 ft x 4 ft suspended ceiling tiles in the first floor restroom. There was standing water in the basement kitchen area reportedly from a back up in the sump pump. The source of water intrusion should be identified and corrected in these areas and water-damaged ceiling tiles should be replaced to minimize the potential for mold growth (**RAC 5**). **29 CFR 1960.8a**

- There was evidence of suspect mold growth identified on a plaster wall in the basement storage area and on the metal entrance door to the old firing range (see Photo 9, Photo 10, and Photo 11). Since both of these surfaces are poor nutrient sources for mold and the contamination is only on the surface, they should be wiped off with a dilute bleach solution. Cleaning should be repeated as needed if additional contamination occurs (**RAC 4**). **29 CFR 1960.8a**

- There are several areas that contain suspect asbestos-containing pipe insulation within the facility and the materials are in good condition. The insulation should be considered asbestos-containing until sampling is conducted to prove otherwise. In the interim, a detailed

operation and maintenance (O&M) plan should be developed to insure that the condition of the pipe fitting insulation is maintained in good condition. Housekeeping and maintenance personnel should be advised of the presence of the suspect asbestos-containing material (**RAC 4**). **1910.1001(j)(7)(iv)** and **29 CFR 1960.8a**

- Asbestos-containing 9 inch x 9 inch brown floor tiles with white and red flecks were identified in the state maintenance office and in the first floor hallway outside the drill hall. In addition, there was 9 x 9 inch cream tile with brown and white flecks identified in the administration office and recreation room. Overall, the material is in good condition with some isolated damage. It is recommended that a detailed operations and maintenance (O&M) plan be developed to insure that the condition of the floor tile is maintained in good condition. Housekeeping and maintenance personnel should be advised of the presence of the suspect asbestos-containing material (**RAC 4**). **1910.1001(j)(7)(iv)** and **29 CFR 1960.8a**

- There are several locations where lead dust wipe samples were above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). The highest levels were noted in the old firing range. Currently, the old firing range is not used and access is restricted. Continue to lock and restrict access to the old firing. The range should be cleaned to minimize the lead dust contamination. Anyone that may perform work in these areas, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust (**RAC 4**). **NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$)**

- Detectable levels of lead were found in all eight paint chip samples collected and therefore considered to be lead-containing paint. OSHA requires that precautions be taken when lead is present, but does not define a threshold below which no action is required. Therefore, anyone that may perform repair or maintenance activities to any surfaces in these areas must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead-based paint. The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. There are three locations where peeling paint samples contained levels of lead that were above the HUD criteria of 0.5% lead by weight (**RAC 4**). **Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62 and Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing**.

- There are several locations where the measured illuminance levels are below those recommended by the Illuminating Engineering Society of North America. Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels (**RAC 4**). **ANSI/IESNA RP-1-04 (Office Lighting) and ANSI ANSI/IESNA RP-7-01 (Lighting Industrial Facilities)**

- Housekeeping was good overall throughout the facility, with the exception of a communication cable extending across a walkway in the commander's office. A cord protector or tape should

be placed over the cable to eliminate the trip hazard. In addition, a drainage cover that was partially removed in the basement mess hall also presents a trip hazard. It is recommended to drill a hole in the drainage cover for the dehumidifier drainage hose. This will allow the drainage hose to drain properly without the need to partially remove the drain cover. In the interim, an orange cone should be placed over the drain when the drain cover is removed. (**RAC 4**). **1910.22(b)(1)**

- The Material Safety Data Sheets (MSDS) were in order and all chemicals found in the facility were listed in the materials list (or chemical inventory) at the beginning of the MSDS notebook. However, many chemicals listed in the chemical inventory list did not have a corresponding MSDS. It is recommended that an MSDS for each item on the chemical inventory list be placed in the MSDS notebook **RAC 4**. **1910.1200(g)**

- Indoor relative humidity measurements were in excess of the maximum humidity level of 60% recommended by ASHRAE. Humidity levels should be reduced in areas with levels in excess of 60% for the control microbial growth. Note: Seven portable dehumidifiers have been placed in various locations of the basement to help reduce the humidity levels. (**RAC 4**). **ASHRAE Standard 62.1-2004**

2. INTRODUCTION

Consolidated Safety Services, Inc. (CSS) contracted with the U.S. Army National Guard (USARNG) to perform an industrial hygiene evaluation at the New York State Armory located at 225 Elizabeth Street in Ogdensburg, New York. Scott Shultz performed the evaluation on July 8, 2008. The point of contact for the facility was Mr. George Hays, Maintenance Assistant. The purpose of the evaluation was to review industrial hygiene and safety programs, evaluate potential exposures to physical and chemical hazards, and evaluate exposure control strategies and equipment. The building was visually inspected and evaluated for: damaged suspect asbestos-containing materials (ACM), water-damaged building materials, possible mold growth, housekeeping, deteriorated suspect lead-based paints, and poor indoor air quality.

The New York State Armory currently has one unit assigned to the facility: Company B-2-108. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations. The building that houses the New York State Armory was constructed in 1898 and consists of multiple offices, restrooms, locker rooms, supply areas, an exercise room, a kitchen, a mess hall, an old firing range, a drill hall, and a separate garage. The garage is used for parking vehicles and storing items. No maintenance activities were reported to be performed in the garage. A diagram of the building layout was not available.

The findings, discussion and interpretation of results are provided in Section 5. The conclusions are provided in Section 9. A diagram of the building layout was not available. Sampling sheets and laboratory results for possible ACM, Lead Paint, Lead in Air, and Lead dust are provided in Appendix A. Selected photographs taken during the evaluation are provided in Appendix B. An explanation of how the Risk Assessment Code (RAC) was determined is located in Appendix C. A list of references used during the evaluation is provided in Appendix D.

This report is for the sole use of the USARNG. The results presented in this report are only indicative of conditions during the time of the evaluation. This evaluation does not purport to include all occupational hazards at this facility, and only those areas and exposures specifically mentioned were evaluated.

3. EVALUATION METHODS

3.1 *Noise Survey*

Sound pressure levels were measured using a Casella sound level meter. The sound level meter was calibrated before and after the survey period using a Casella CEL acoustical calibrator, factory calibrated in October 2007.

3.2 *Illumination*

Illumination measurements were taken using a Cal-Light 400, calibrated on February 22, 2008, and compared to the American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

3.3 *Indoor Air Quality Measurements*

Indoor air quality parameters (i.e., carbon dioxide concentration, carbon monoxide concentration, temperature and relative humidity) were measured using a TSI Q-Trak Plus Model 8554, calibrated in January 2008. Carbon dioxide, temperature and relative humidity measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). CO levels were compared to Occupational Safety and Health Administration Permissible Exposure Limit, the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for CO.

4. OPERATIONS DESCRIPTIONS

4.1 *Facility Operations*

There is currently one unit assigned to the facility: Company B-2-108. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations.

4.1.a. Noise Measurements

A sound level survey was performed to determine if there were any hazardous noise areas at the facility that could possibly result in exposures to personnel in excess of the Permissible Noise Dose. Sound pressure levels were measured throughout the facility. Measurements ranged from 48 dBA to 73 dBA within the facility. Exposure to sound pressure levels of this magnitude would not result in exposures equal to or in excess of the Permissible Noise Dose over an eight hour period.

4.1.b. Lighting Survey

Illumination levels were measured in all areas within the facility. The measurements indicate that several areas did not meet the illuminance levels recommended by the Illuminating Engineering Society of North America. The measurement results are presented in Table 1.

4.1.c. Additional Information

N/A

4.1.d. Recommendations

Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels.

5. PHYSICAL CONDITION OF THE FACILITY

5.1 *Visual Inspection – Peeling Paint – Lead*

A visual inspection was performed to determine if any areas of peeling or deteriorated paint at the facility could pose a lead exposure hazard. There were six areas identified where paint was peeling that may result in a potential exposure hazard. These areas include the first floor bathroom, the Mess Hall, the old firing range, the classroom, the chemical storage room and the exterior garage door. Eight samples of the paint were collected and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) Method 7420.

The results, presented in Table 3, indicated detectable levels of lead in all of the samples collected. The paint is therefore considered to be lead-containing paint. All construction activities that involve lead-containing coatings are regulated by the Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62. The standard currently does not define a specific concentration of lead, which must be present within paint for it to be considered "lead-containing." Therefore, painted and glazed surfaces that contain detectable concentrations of lead must be handled in accordance with the OSHA Lead in Construction Standard. Any contractor performing work that could impact paint films or glazing that have detectable concentrations of lead must be informed of the testing results, and must take appropriate actions to comply with OSHA Standard 29 CFR 1926.62. These appropriate actions include performing air monitoring to measure worker exposure; assuring that the workers are provided with adequate respiratory protection; and assuring that workers are provided with appropriate training.

The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. The peeling green paint on the exterior garage door, the light blue peeling paint on the second floor classroom wall, and the gray peeling paint on the floor of the old firing range contained more than 0.5% lead by weight and are therefore considered lead-based paint.

5.2 *Visual Inspection – Dust – Lead*

Due to concerns with lead contamination, wipe samples were collected from various surfaces throughout the facility. Twenty samples were collected from the walls, floors, and other surfaces. The samples were collected using “Ghost Wipes” using the prescribed NIOSH method for conducting surface wipe samples. The samples were collected and placed in new plastic containers and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) 600/R-93/200 Lead in Surface Wipe Samples. The results for the wipe samples, presented in Appendix B indicate that there were 12 samples from the drill hall, kitchen, firing range, and the commander’s office that were above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). It is recommended that signage be posted in the old firing range warning of the lead hazard and access should continue to be restricted. Each of the other areas should be cleaned to eliminate the lead dust contamination. Anyone that may perform work in these areas, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust. Also, prior to

designating the old firing range to another function, all lead contamination needs to be properly cleaned up. According to the Maintenance Assistant, the old firing range has not been properly cleaned or decontaminated. The old firing range is locked at all times and restricted for entry. The old firing range was empty during the survey.

5.3 *Visual Inspection – Asbestos*

A visual inspection was performed to determine if there was any suspect asbestos-containing material (ACM) at the facility and its condition. There were several types of suspect ACM identified in the facility. There was approximately 600 square feet (ft^2) of 9 inch x 9 inch brown floor tile with white and red flecks, identified in the state maintenance office and in the first floor hallway outside the drill hall. There was also approximately 500 ft^2 of 9 x 9 inch cream tile with brown and white flecks, identified in the administration office and recreation room. Overall, the material was in good condition with a few areas of minor, isolated damage. Two samples of floor tile were collected and submitted to AMA Analytical Services, Inc., to be analyzed by Polarized Light Microscopy (PLM) and Transmission Electron Microscopy (TEM), to determine if the tiles are asbestos-containing. The result of the samples, presented in Table 4, indicate that the floor tile is asbestos-containing. In addition, there were pipe fittings identified in areas throughout the facility (see Photo 5). All fittings were in good condition and no samples were collected. These fittings should be presumed to contain asbestos unless sampling is conducted to prove otherwise. According to Mr. George Hays, old pipe fittings have been replaced on approximately two thirds of the pipes in the facility. It is recommended that anyone conducting work on any asbestos-containing material or presumed asbestos-containing material be made aware of the asbestos and the appropriate precautions be taken to minimize exposures. In addition, a detailed operation and maintenance (O&M) plan should be developed to insure that the materials are not damaged.

5.4 *Visual Inspection – Water Damage and Mold Growth*

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. There was evidence of suspect mold growth on a plaster wall in the basement storage room where water reportedly enters. There was also suspect mold identified on the metal entrance door to the old firing range. The plaster wall and metal door are not good nutrient sources for mold growth and should be wiped off with a dilute bleach solution. Also, there was evidence of water damage to several 2 ft x 4 ft suspended ceiling tiles in the first floor restroom. Standing water was noted in the basement kitchen area which was reportedly caused from a sump pump back up. The sources of water intrusion should be identified and corrected and water-damaged ceiling tiles should be replaced to minimize the potential for mold growth.

5.5 *Visual Inspection – Housekeeping*

A visual inspection was performed to assess the state of housekeeping in the facility. Housekeeping was good overall with the exception of a communication cable that extends across a walkway (See Photo 17) in the commander's office presenting a trip hazard. A cord protector or tape is recommended to be placed over the cable to eliminate the trip hazard. In addition, a drainage

cover located in the basement was slightly removed presenting a potential trip hazard (See Photo 16). It is recommended to drill a hole in the drainage cover for the dehumidifier drainage hose. This will allow the drainage hose to drain properly without the need to partially remove the drain cover.

6. BUILDING CONCERNS

6.1 *Ergonomic Concerns*

Interviews of employees were conducted and observations made to determine if there were work activities that result in any ergonomic concerns in the facility. No ergonomic concerns were identified.

6.2 *Illumination Issue*

Illumination levels were measured in all areas of the facility and the results indicate that some illuminance levels do not meet the levels recommended by the Illuminating Engineering Society of North America. The measurements ranged from a low of 2 foot candles (fc) to a high of 83 fc. The complete results of the evaluation can be found in Table 1, including whether or not the measured levels met ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities) recommendations for illumination.

6.3 *Indoor Air Quality (IAQ)*

Temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) were evaluated in the facility and compared with recognized "comfort factors." Currently, there are no enforceable regulatory IAQ standards. However, ASHRAE defines acceptable IAQ as air (1) in which there are no known contaminants at harmful levels, as determined by cognizant authorities, and (2) about which a substantial majority (80% or more) of the people exposed do not express dissatisfaction. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality," represents the state of-the-art in ventilation design requirements for commercial, institutional, and residential buildings. It was developed "to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to minimize the potential for adverse health effects." The standard also considers chemical, physical, and biological contaminants and other factors that impact IAQ and affect occupant health and comfort.

A digital IAQ meter (TSI Q-Trak Plus, model #8554) was used to collect temperature, relative humidity, CO_2, and CO measurements in several areas throughout the facility. Results are provided in Table 2. These measurements were compared with current ASHRAE consensus standards and were found to be within acceptable limits.

6.3.a. Carbon Dioxide (CO_2)

Building occupants generate CO_2 as a product of respiration. Concentrations of CO_2 are often used during indoor air quality investigations to determine the effectiveness of ventilation systems in removing common indoor pollutants. The indoor CO_2 concentration will increase in a given space with fixed ventilation output in proportion to the number of building occupants and their activity level. ASHRAE Standard 62.1-2004 uses CO_2 as a surrogate indicator of building ventilation; namely, an indoor-outdoor CO_2 concentration differential of less than 700 parts per million (ppm) is considered to indicate adequate ventilation. This level is not considered an indication of a health risk, but rather an indicator for human comfort.

Indoor levels of CO_2 ranged from 330 parts per million (ppm) in the basement kitchen to 820 ppm in the classroom. Outdoor CO_2 levels were approximately 350 ppm during the monitored period. The indoor CO_2 levels were less than 1050 ppm (the outdoor CO_2 levels plus 700 ppm), which indicates adequate ventilation.

6.3.b. Carbon Monoxide (CO)

The Occupational Safety and Health Administration has established a Permissible Exposure Limit for carbon monoxide of 50 ppm averaged over an eight-hour work day. Similarly, the American Conference of Governmental Industrial Hygienists has established a Threshold Limit Value of 25 ppm averaged over an eight-hour work day. The CO measurements in the facility ranged from 0.2 ppm to 3 ppm. These levels are well below established occupational exposure limits. Elevated levels of CO are not anticipated at this facility based on the reported activities and observed conditions.

6.3.c. Temperature

Indoor temperature measurements in the facility ranged from 76.2 ºF in the recreation room to 78.8 ºF in the kitchen. The garage temperature ranged from 83 ºF to 84 ºF. Most of the temperature measurements were on the upper end or slightly above the acceptable temperature ranges according to ASHRAE. No central air conditioning exists at the facility.

6.3.d. Relative Humidity

Indoor relative humidity (RH) measurements ranged from 50% in room basement armory and supply room to 66% in the second floor classroom. The relative humidity was 69% in the garage. Relative humidity levels were in excess of the maximum humidity level of 60% recommended by ASHRAE for the control of microbial growth. Elevated humidity levels (60% or greater) alone will not ensure the microbial growth such as mold. A moist nutrient source (including sheetrock and suspended ceiling tiles that have become wet through roof leaks, pipe bursts, etc.) and elevated temperatures are also required for mold growth. Humidity levels should be reduced in areas with levels in excess of 60%. Note: Seven portable dehumidifiers have been placed in various locations of the basement to help reduce the humidity levels.

Acceptable Ranges of Temperature and Relative Humidity during Summer and Winter Months (in degrees Fahrenheit (ºF))		
Relative Humidity	**Winter Temperature**	**Summer Temperature**
30%	68.5 – 76.0	74.0 – 80.0
40%	68.5 – 75.5	73.5 – 79.5
50%	68.5 – 74.5	73.0 – 79.0
60%	68.0 – 74.0	72.5 – 78.0
• The humidity level should be maintained below 60% to reduce microbial problems • The humidity level should be maintained above 30% to prevent irritation of sinus linings, which can lead to sinus problems		

6.3.e. Lead Air Sampling

Due to concerns with lead contamination, air samples were collected from two areas in the facility; the recruiting office and the unit administration office. The samples were collected using SKC brand personal sampling pumps with the appropriate sampling media. Pumps were calibrated both before and after use with a Dry-Cal calibrator, which is considered a primary standard. General area samples were collected as close to breathing zone height as could be achieved. The samples were shipped to AMA Analytical Services, Inc. and Analysis was conducted in accordance with the Environmental Protection Agency (EPA) 600/R-93/200 Lead in Air Samples. Both air samples were below the OSHA PEL and ACGIH TLV.

7. INDUSTRIAL HYGIENE AND SAFETY PROGRAMS

An evaluation was performed to determine the applicability of the following programs:

- Confined Space;
- Hearing Conservation;
- Respiratory Protection;
- Hazard Communication (HAZCOM); and
- Personal Protective Equipment (PPE).

It was determined that all industrial hygiene and safety programs are managed at the unit level and there are no specific facility based programs; therefore, no programs were reviewed for the facility.

8. VEHICLE, EQUIPMENT AND HAZARDOUS MATERIALS LIST

The use of the items on the equipment and hazardous materials lists were evaluated and it appears that all the items are used at the facility. The Material Safety Data Sheets (MSDS) were in order and all chemicals found in the facility were listed in the materials list (or chemical inventory) at the beginning of the MSDS notebook. However, many chemicals listed in the chemical inventory list do

not have a corresponding MSDS. It is recommended that an MSDS for each item on the chemical inventory list be placed in the MSDS notebook. In addition, all chemicals that do not contain a MSDS should continue to be stored in a locked area (See Photo 13). According to Mr. George Hays, there are no vehicles assigned specifically to the facility. All vehicles at the facility are assigned to specific units for the use only.

9. CONCLUSION

Industrial hygiene concerns associated with some minor water damage to several 2 ft x 4 ft suspended ceiling tiles were identified at the facility. Suspect mold concerns were identified at two areas of the facility. Some minor housekeeping problems were identified. Asbestos-containing materials were identified in two areas of the facility. Detectable levels of lead were found in eight lead paint chip samples from seven locations. There were several locations where lead dust wipe samples were above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). MSDS should be available for each chemical on the chemical inventory list. There were several locations where the measured illuminance levels are below those recommended by the Illuminating Engineering Society of North America. Humidity levels should be reduced in areas with levels in excess of 60%. These concerns are discussed in Sections 4 through 8.

Tables

Table 1. Illumination Measurements
The New York State Armory
Ogdensburg, New York
Date of Sampling: July 8, 2008

Location	Luminance (fc)[1]	Standard (fc)	Standard Met (Y/N)
Mess Hall (basement)	15 - 33	30	N
Kitchen (basement)	16 – 38	50	N
Storage Room (basement)	6 – 18	30	N
Old Firing Range (basement)	3 - 12	30	N
Exercise Room (basement)	2 - 15	30	N
Electrical Room (basement)	10 - 83	30	N
Change Room/Shower Room (basement)	6 - 33	7	N
Armory and Supply Room (basement)	10 - 37	5	Y
Drill Hall (first floor)	31 – 35	30	Y
Unit Administration Office (first floor)	14 – 25	30	N
Recreation Room (first floor)	32 – 49	30	Y
Recruiting Office (first floor)	34	30	Y
State Maintenance Office (first floor)	73	30	Y
Locker Room (first floor)	10 – 54	7	Y
Bathroom (first floor)	14 – 37	5	Y
Classroom (second floor)	37 – 40	30	Y
Commanders Office (second floor)	19 – 49	30	N
Officers Locker Room (second floor)	14 – 39	30	N
Garage	16 - 34	75	N

[1] fc = foot candles

The readings were taken with a Cal-Light 400, factory calibrated on February 22, 2008.

The standards listed in Table 1 are from ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities

Table 2. Indoor Air Quality Measurements
The New York State Armory
Ogdensburg, New York
Date of Sampling: July 8, 2008

Location	Occupants Present in Area	CO_2 (ppm)[1]	CO (ppm)	Relative Humidity (%)	Temperature (° F)
Mess Hall (basement)	2	380 – 395	2.7	54 - 55	78 – 78.5
Kitchen (basement)	2	330 – 380	2.6	50 – 51	78 – 78.8
Storage Room (basement)	2	390- 415	2.4	55 – 56	77 – 78
Old Firing Range (basement)	2	74 – 75	2.4	64 – 65	74 – 75
Exercise Room (basement)	2	450 – 510	1.7	62 – 63	77 – 78
Electrical Room (basement)	2	405 – 460	2.4	63 – 65	77 – 77.5
Change Room/Shower Room (basement)	2	410 – 480	2.3	59 – 60	76.5 – 77
Armory and Supply Room (basement)	2	450 – 520	2.1	50 – 51	76.8 – 77
Drill Hall (first floor)	2	405 – 415	0.4	57 – 58	78
Unit Administration Office (first floor)	2	630 – 660	0.5	62 – 63	78
Recreation Room (first floor)	2	440 – 480	0.2	67 – 68	76.2 – 77
Recruiting Office (first floor)	2	420 – 440	0.6	53 – 54	78 – 78.5
State Maintenance Office (first floor)	2	390 – 494	0.8	60 - 61	77.7 – 77.8
Locker Room (first floor)	2	485 – 515	0.4	54 - 55	77 - 78
Bathroom (first floor)	1	460 – 475	0.4	61 – 62	78
Classroom (second floor)	2	760 – 820	2.2	64 – 66	76.8 - 77
Commanders Office (second floor)	2	690 – 730	2.2	63 – 64	77 - 78
Officers Locker Room (second floor)	2	690 – 710	2.1	64 - 65	77 - 78
Garage	2	390 – 435	3.0	68 – 69	83 - 84
Outside	1	350	3.5	51 – 52	91

[1] ppm = parts per million

CO_2, CO, relative humidity and temperature measurements were taken with a TSI Q-Trak Plus Model 8554, calibrated January 2008.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommends that indoor CO_2 concentration be maintained at a level that is less than 700 ppm above outdoor concentration.

National Ambient Air Quality Standard (NAAQS) recommendation for ambient CO: below 9 ppm

Occupational Safety and Health Administration Permissible Exposure Limit for CO: 50 ppm

American Conference of Governmental Industrial Hygienists Threshold Limit Value for CO: 25 ppm

Table 3. Peeling Paint Chip Sample Results
The New York State Armory
Ogdensburg, New York
Date of Sampling: July 8, 2008

Sample Number	Location	Results (%)[1]
07082008 - 201	Brown peeling paint on the floor of the first floor restroom	0.026
07082008 - 202	Gray peeling paint in the basement mess hall floor	0.17
07082008 - 203	Brown peeling paint on basement mess hall table top	0.086
07082008 - 204	Yellow peeling paint on wall in the old firing range	3.9
07082008 - 205	Gray peeling paint on floor in the old firing range	20
07082008 - 206	Yellow peeling paint on wall in the basement chemical storage room	0.014
07082008 - 207	Light blue peeling paint on second floor classroom wall.	13
07082008 - 208	Green peeling paint on exterior garage door.	15

[1] Results cited as % lead by weight

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 7420

Table 4. Bulk Suspect Asbestos Containing Material (ACM) Samples
National Guard, the New York State Armory
Ogdensburg, New York
Date of Sampling: July 8, 2008

Sample Number	Location	Results (%)/Type[1]
07082008 - 300	9 in x 9 in brown floor tile with white and red flex in the first floor main hallway outside of the unit administration office.	2% Chrysotile
07082008 - 301	9 in x 9 in cream floor tile with white and black flex in the first floor recreation room.	8% Chrysotile

[1]Results cited as % asbestos

Table 5.Lead Wipe Samples
New York State Armory
Ogdensburg, New York
Date of Sampling: July 8, 2008

Sample Number	Location	Sample Area[1]	Results (µg/ft²)[2]	NGB Standard (µg/ft²)[3]
07082008 – 001	Drill Hall – back left corner floor	12 in x 12 in	700	<200
07082008 - 002	Drill Hall – back left radiant heat vent	12 in x 12 in	87	<200
07082008 - 003	Drill Hall – floor at bottom of staircase	12 in x 12 in	480	<200
07082008 - 004	Drill Hall – floor under staircase	12 in x 12 in	420	<200
07082008 - 005	Drill Hall – rear radiant heat vent	12 in x 12 in	400	<200
07082008 - 006	Mess hall – table top	12 in x 12 in	28	<200
07082008 - 007	Kitchen – counter top	12 in x 12 in	420	<200
07082008 - 008	Old Firing Range – bullet trap	12 in x 12 in	57000	<200
07082008 - 009	Old Firing Range – left wall by target	12 in x 12 in	790	<200
07082008 - 10	Old Firing Range – stored files	12 in x 12 in	92	<200
07082008 - 11	Old Firing Range – center front floor near target	12 in x 12 in	4500	<200
07082008 - 12	Old Firing Range – right wall by target	12 in x 12 in	580	<200
07082008 - 13	Old Firing Range – lighting fixture	12 in x 12 in	680	<200
07082008 - 14	Old Firing Range – ventilation unit in rear of room	12 in x 12 in	390	<200
07082008 - 15	Electrical Room – top of battery rack	12 in x 12 in	56	<200
07082008 - 16	Electrical Room – wall behind charging rack	12 in x 12 in	<12	<200
07082008 - 17	Classroom – Desk	12 in x 12 in	44	<200
07082008 - 18	Commanders Office - top of file cabinet	12 in x 12 in	400	<200
07082008 - 19	Foyer – first floor floor	12 in x 12 in	64	<200
07082008 - 20	State Maintenance Office – desk top	12 in x 12 in	100	<200

[1] Sample area was 12 in x 12 in with a total sample area of 144 in^2 or at total of 1 ft^2

[2] Results are presented as microgram per square feet ($\mu g/ft^2$)

[3] Standard is based on the NGB Region North IH office policy

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 600/R-93/200.

The sample results were compared to the NGB Region North IH Office Policy of maintaining <200 $\mu g/ft^2$

Table 6.General Area Air Samples for Lead
New York State Armory
Ogdensburg, New York
Date of Sampling: July 8, 2008

Sample Number	Location	Sample Information			Results (ug/m³) [2]
		Time Sampled / Minutes	Flow Rate (lpm)[1]	Volume (liters)	
07082008-050	First floor Unit Administration Office	287	2	574	<5.3
07082008-051	First floor Recruiting Office	285	2	570	<5.2
OSHA PEL (8-hour TWA)[4]					50
ACGIH TLV (8-hour TWA)[5]					50

1 lpm = liters of air per minute

2 ug/m³ = micrograms per cubic meter

3 ND = Parameter not detected above LOD

4 U.S. Occupational Safety and Health Administration Permissible Exposure Limit (8-hour Time-Weighted Average)

5 American Conference of Governmental Industrial Hygienists Threshold Limit Value (8-hour Time-Weighted Average)

Appendix A
Sampling Sheets and Laboratory Results for Suspect Asbestos-containing Material Samples, Lead Paint Chip Samples, Lead Dust Wipe Samples, and Lead Air Samples.

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

Ogdensburg

CHAIN OF CUSTODY

Page 1 of 3
(Please Refer To This Number For Inquires) 178307

Mailing/Billing Information:
1. Client Name: NGB Region North JH office
2. Address 1: 301 - JH old Bay lane
3. Address 2: Havre De Grace, MD 21078
4. Address 3:
5. Phone #: 410 - 942 - 0273 x 5 Fax #: 410-942-0254

Submittal Information:
1. Job Name: New York State Armory Ogdensburg NY
2. Job Location: Ogdensburg NY
3. Job #: [redacted] P.O. #: [redacted] 68 - 6230
4. Contact Perso[redacted]
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due: ☐ 24 Hours Time Due: Comments: Standard turn around	☐ Immediate ☐ Next Day ☐ 2 Day ☐ 3 Day ☒ 5 Day + Date Due: 7/22/08 ☐ Results Required By Noon (Every Attempt Will Be Made to Accomodate)	☐ Inclu[redacted] Sheets with Report ☐ Ema[redacted] @ consolidatedsafety.n ☐ Fax: ☐ Verbals:

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 2 (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.6 ____ (QTY)
☐ Other (specify ____) ____ (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area)Dust D6480-99 ____ (QTY)
TEM Water
☐ Qual. (pres/abs) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)

☐ All samples received in good condition unless otherwise noted. (TEM Water samples ____ °C)

Lead Analysis
☒ Paint Chip 8 (QTY)
☒ Dust Wipe (wipe type Ghost wipe) 2c (QTY)
☒ Air 2 (QTY)
☐ Soil/Solid ____ (QTY)
☐ TCLP ____ (QTY)
☐ Drinking Water ____ (QTY)
☐ Waste Water ____ (QTY)
☐ Dust Wipe Furnace (wipe type ____) ____ (QTY)

Mold - Direct Microscopic Analysis
☐ Spore-Trap ____ (QTY) ☐ Bulk ____ (QTY)
☐ Surface Swab ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
☐ Surface Tape ____ (QTY) ☐ Other (Specify ____) ____ (QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
07082008-001	Drill Hall	7/8/08		1ft²				X				X				
-002	Drill Hall			1ft²				X				X				
-003	Drill Hall			1ft²				X				X				
-004	Drill Hall			1ft²				X				X				
-005	Drill Hall			1ft²				X				X				
-006	Mess Hall			1ft²				X				X				
-007	Kitchen			1ft²				X				X				
-08	Firing Range			1ft²				X				X				
-09	Firing Range			1ft²				X				X				
-10	Firing Range			1ft²				X				X				
-11	Firing Range			1ft²				X				X				

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: 7/16/08 Contact: By: MS
Air volumes from cassettes
Date/Time: 7/18/08 Contact: SS By: MS
Disclaimer OK for paint
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 7/15/08 @1000 Via: FedEx By (P[redacted]
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): ____ Sign
3. Results Reported To: ____ Via: ____ Date: ____ / ____ / ____ Time: ____ Initials: ____
4. Comments:

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

Ogdensburg

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 178309

Mailing/Billing Information:
1. Client Name: _____
2. Address 1: _____
3. Address 2: _____
4. Address 3: _____
5. Phone #: _____ Fax #: _____

Submittal Information:
1. Job Name: New York State Armory
2. Job Location: Ogdensburg NY
3. Job #: _____ P.O. #: _____
4. Contact Person: [redacted] @ phone # 571-265-6230
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due: _____
❑ 24 Hours Time Due: _____
Comments: Standard turn around

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ~~❑ 5 Day +~~
❑ 2 Day Date Due: _____
❑ Results Required By Noon (Every Attempt Will Be Made to Accomodate)

REPORT TO:
❑ Inc[redacted]ata Sheets with Report
~~❑ Em~~ [redacted] @consol.datedsafety.com
❑ Fax: _____
❑ Verbals: _____

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ NIOSH 7400_____(QTY)
❑ Fiberglass_____(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ AHERA_____(QTY)
❑ NIOSH 7402_____(QTY)
❑ Other (specify_____)_____(QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate_____(QTY)
❑ EPA Point Count_____(QTY)
❑ NY State Friable 198.1_____(QTY)
❑ Grav. Reduction ELAP 198.6_____(QTY)
❑ Other (specify_____)_____(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield_____(QTY)
❑ NY State PLM/TEM_____(QTY)
❑ Residual Ash_____(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust_____(QTY)
❑ Quan. (s/area) Vacuum D5755-95_____(QTY)
❑ Quan. (s/area)Dust D6480-99_____(QTY)
TEM Water
❑ Qual. (pres/abs)_____(QTY)
❑ ELAP 198.2/EPA 100.2_____(QTY)
❑ EPA 100.1_____(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____°C)

Lead Analysis
❑ Paint Chip_____(QTY)
❑ Dust Wipe (wipe type_____)_____(QTY)
❑ Air_____(QTY)
❑ Soil/Solid_____(QTY)
❑ TCLP_____(QTY)
❑ Drinking Water_____(QTY)
❑ Waste Water_____(QTY)
❑ Dust Wipe Furnace (wipe type_____)_____(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap_____(QTY) ❑ Bulk_____(QTY)
❑ Surface Swab_____(QTY) ❑ Surface Vacuum Dust_____(QTY)
❑ Surface Tape_____(QTY) ❑ Other (Specify_____)_____(QTY)

CLIENT ID NUMBER	SAMPLE INFORMATION: SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WIPE (SPECIFY OTHER)	PAINT CHIP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
07082008-12	Firing Range	7/8/08		1ft²				X				X					Date/Time: Contact: By:
-13	Firing Range							X				X					
-14	Firing Range							X				X					
-15	Electrical Rm							X				X					
-16	Electrical Rm							X				X					Date/Time: Contact: By:
-17	classroom							X				X					
-18	commanders office							X				X					
-19	Foyer Entry							X				X					
-20	St. Main. office							X				X					Date/Time: Contact: By:
07082008-201	bathroom							X			X						
-202	Mess Hall							X			X						

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ____ / ____ / ____ @ ____ Via: ____ By (Print): ____ Sign: ____
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ____ / ____ / ____ Time: ____ Initials: ____
4. Comments: ____

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

Ogdensburg

CHAIN OF CUSTODY

(Please Refer To This Number For Inquiries) 178308

Mailing/Billing Information:

1. Client Name: _____
2. Address 1: _____
3. Address 2: _____
4. Address 3: _____
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: New York State Armory
2. Job Location: Ogdensburg NY
3. Job #: _____ P.O. #: _____
4. Contact Person: [redacted] (c phone # 571-268-6230
5. Submitted by: _____ Signature [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due: _____
❑ 24 Hours Time Due: _____
Comments: Standard turn around

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ☒ 5 Day +
❑ 2 Day Date Due: _____
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
❑ Include Data Sheets with Report
☒ Email [redacted] @ consolidatedsafety.com
❑ Fax: _____
❑ Verbals: _____

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ NIOSH 7400 _____ (QTY)
❑ Fiberglass _____ (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ AHERA _____ (QTY)
❑ NIOSH 7402 _____ (QTY)
❑ Other (specify_____) _____ (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate _____ (QTY)
❑ EPA Point Count _____ (QTY)
❑ NY State Friable 198.1 _____ (QTY)
❑ Grav. Reduction ELAP 198.6 _____ (QTY)
❑ Other (specify_____) _____ (QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield _____ (QTY)
❑ NY State PLM/TEM _____ (QTY)
❑ Residual Ash _____ (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
❑ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
❑ Quan. (s/area)Dust D6480-99 _____ (QTY)
TEM Water
❑ Qual. (pres/abs) _____ (QTY)
❑ ELAP 198.2/EPA 100.2 _____ (QTY)
❑ EPA 100.1 _____ (QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____ °C)

Lead Analysis
❑ Paint Chip _____ (QTY)
❑ Dust Wipe (wipe type _____) _____ (QTY)
❑ Air _____ (QTY)
❑ Soil/Solid _____ (QTY)
❑ TCLP _____ (QTY)
❑ Drinking Water _____ (QTY)
❑ Waste Water _____ (QTY)
❑ Dust Wipe Furnace (wipe type _____) _____ (QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap _____ (QTY) ❑ Bulk _____ (QTY)
❑ Surface Swab _____ (QTY) ❑ Surface Vacuum Dust _____ (QTY)
❑ Surface Tape _____ (QTY) ❑ Other (Specify_____) _____ (QTY)

SAMPLE INFORMATION					ANALYSIS							MATRIX					CLIENT CONTACT
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER / WASTE / OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY) Date/Time Contact: By:
07082008 - 203	Mess Hall	7/8/08						X			X						
- 204	Firing Range							X			X						
- 205	Firing Range							X			X						
- 206	Chem Storage							X			X						
- 207	classroom							X			X						Date/Time: Contact: By:
- 208	Ext. Garage Door							X			X						
07082008 - 300	Main Floor Hallway						X				X						
- 301	Rec Room						X				X						
07082008 - 051	Recruiting office		2L/Min					X		X							Date/Time: Contact: By:
- 050	Unit Admin office		2L/Min					X		X							

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: ____ / ____ / ____ @ ____ Via: _____ By (Print): _____ Sign: _____
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____ / ____ / ____ Time: _____ Initials: _____
4. Comments: _____

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead See aihaapp.org for details
100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	New York State Armory Ogdensburg, NY	**Chain Of Custody:**	178307		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Ogdensburg, NY	**Date Submitted:**	7/15/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]		
		P.O. Number:	Not Provided	**Date Analyzed:**	7/21/2008	**Report Date:**	7/21/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result		Comments
0869511	07082008-001	Flame	Wipe	****	1.000	12.00	ug/ft²	700	ug/ft²	
0869512	07082008-002	Flame	Wipe	****	1.000	12.00	ug/ft²	87	ug/ft²	
0869513	07082008-003	Flame	Wipe	****	1.000	12.00	ug/ft²	480	ug/ft²	
0869521	07082008-004	Flame	Wipe	****	1.000	12.00	ug/ft²	420	ug/ft²	
0869522	07082008-005	Flame	Wipe	****	1.000	12.00	ug/ft²	400	ug/ft²	
0869523	07082008-006	Flame	Wipe	****	1.000	12.00	ug/ft²	28	ug/ft²	
0869524	07082008-007	Flame	Wipe	****	1.000	12.00	ug/ft²	420	ug/ft²	
0869525	07082008-08	Flame	Wipe	****	1.000	12.00	ug/ft²	57000	ug/ft²	
0869526	07082008-09	Flame	Wipe	****	1.000	12.00	ug/ft²	790	ug/ft²	
0869527	07082008-10	Flame	Wipe	****	1.000	12.00	ug/ft²	92	ug/ft²	
0869528	07082008-11	Flame	Wipe	****	1.000	12.00	ug/ft²	4500	ug/ft²	
0869529	07082008-12	Flame	Wipe	****	1.000	12.00	ug/ft²	580	ug/ft²	
0869530	07082008-13	Flame	Wipe	****	1.000	12.00	ug/ft²	680	ug/ft²	
0869531	07082008-14	Flame	Wipe	****	1.000	12.00	ug/ft²	390	ug/ft²	
0869532	07082008-15	Flame	Wipe	****	1.000	12.00	ug/ft²	56	ug/ft²	
0869533	07082008-16	Flame	Wipe	****	1.000	12.00	ug/ft²	< 12	ug/ft²	
0869534	07082008-17	Flame	Wipe	****	1.000	12.00	ug/ft²	44	ug/ft²	
0869535	07082008-18	Flame	Wipe	****	1.000	12.00	ug/ft²	400	ug/ft²	
0869536	07082008-19	Flame	Wipe	****	1.000	12.00	ug/ft²	64	ug/ft²	

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AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead See aihaap.org for details
100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	New York State Armory Ogdensburg, NY	**Chain Of Custody:**	178307
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Ogdensburg, NY	**Date Submitted:**	7/15/2008
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	7/21/2008

Report Date: 7/21/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result		Comments
0869537	07082008-20	Flame	Wipe	****	1.000	12.00	ug/ft²	100	ug/ft²	
0869538	07082008-201	Flame	Paint Chip	****	N/A	0.01	%Pb	0.026	%Pb	Insufficient sample was submitted to meet recommended reporting limits.
0869539	07082008-202	Flame	Paint Chip	****	N/A	0.01	%Pb	0.17	%Pb	
0869540	07082008-203	Flame	Paint Chip	****	N/A	0.01	%Pb	0.086	%Pb	
0869541	07082008-204	Flame	Paint Chip	****	N/A	0.01	%Pb	3.9	%Pb	
0869542	07082008-205	Flame	Paint Chip	****	N/A	0.01	%Pb	20	%Pb	
0869543	07082008-206	Flame	Paint Chip	****	N/A	0.01	%Pb	0.014	%Pb	
0869544	07082008-207	Flame	Paint Chip	****	N/A	0.01	%Pb	13	%Pb	
0869545	07082008-208	Flame	Paint Chip	****	N/A	0.01	%Pb	15	%Pb	
0869548	07082008-051	Flame	Air	570	N/A	5.26	ug/m³	< 5.3	ug/m³	
0869549	07082008-050	Flame	Air	574	N/A	5.23	ug/m³	< 5.2	ug/m³	

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	New York State Armory Ogdensburg, NY	**Chain Of Custody:**	178307
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Ogdensburg, NY	**Date Submitted:**	7/15/2008
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	7/21/2008 **Report Date:** 7/21/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.
Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.
NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted] Non-Responsive

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Appendix B
Selected Photographs of the Ogdensburg New York State Armory

Photo 1: The exterior front of the building that houses the Ogdensburg New York State Armory.

Photo 2: The exterior front of the associated garage at the Ogdensburg New York State Armory that is used for storing items and parking vehicles. No maintenance activities were reported to be performed in the garage.

Photo 3: Brown 9 in x 9 inch floor tile with white and red flecks, located in the first floor corridor outside of the main Drill Hall.

Photo 4: Cream 9 inch x 9 inch floor tile with brown and white flecks located in the recreation room.

Photo 5: Suspected asbestos-containing pipe insulation on approximately 6 inch pipe in the basement change room.

Photo 6: Water stained 2ft by 4ft suspended ceiling tile in the first floor bathroom.

Photo 7: Water stained suspended ceiling tile in the first floor bathroom.

Photo 8: Water accumulation on the floor of the kitchen is reportedly from a back-up in the sump pump.

Photo 9: Suspect mold is located on a plaster wall in the basement storage area.

Photo 10: Suspect mold is located on a plaster wall in the basement storage area.

Photo 11: Suspect mold is located on the metal entrance door to the firing range.

Photo 12: Storage of routine cleaning chemicals in the basement chemical storage room.

Photo 13: Chemicals that are awaiting MSDSs are stored inside a locked cage area of the chemical storage area.

Photo 14: An old battery charging area that is located in the electrical room.

Photo 15: A view of the old firing range located in the basement.

Photo 16: A partially removed drain cover presents a trip hazard in the basement kitchen area.

Photo 17: Communication cable across a walkway presents a trip hazard in the Commanders off.

Appendix C
Risk Assessment Code Determination

RISK ASSESSMENT CODE DETERMINATION

A Risk Assessment Code (RAC) for each hazard identified is provided at the end of each hazard description. The RAC codes are derived using the matrix provided by the National Guard (reference DOD Instruction 6055.1). This process includes three steps:

- Step 1: Determine the Health Hazard Severity Code (HHSC)

A. Exposure Points Assessed

	Exposure Conditions				
		<CT	**Occasionally >CT Always <STD**	**>CT ≤STD**	**>STD**
AER Possible?	No	0	3	5	7
	Yes	1-2	4	6	8

AER – Alternate exposure route, such as skin absorption, ingestion

CT – DoD component threshold that triggers surveillance actions, such as microwatts/cm^2, dB, parts per million (ppm)

STD – DoD exposure limit, such as Threshold Limit Value (TLV) and Permissible Exposure Limit (PEL)

B. Medical Effects Points Assessed

Condition	Points
No medical effect, such as nuisance noise and nuisance odor	2
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability such as metal fume fever	3-4
Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling, irreversible illness or death, such as asbestosis and lung cancer	7-8

C. Determine the HHSC by totaling the points assessed and using the following guide:

Total Points (sum of A and B)	HHSC
13-16	I
9-12	II
5-8	III
0-4	IV

- Step 2: Determine the Mishap Probability Category (MPC)

A. Duration of Exposure Points Assessed

		Length of Exposure		
		1-8 hr/week	>8hr/week not continuous	Continuous
Type of Exposure	Irregular, intermittent	1-2	4-6	----
	Regular, periodic	2-3	5-7	8

B. Number of Exposed Personnel Points Assessed

Number of Exposed Personnel	Points
<5	1-2
5-9	3-4
9-49	5-6
>49	7-8

C. Determine the MPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum A and B)	MPC
14-16	A
10-13	B
5-9	C
<5	D

Step 3: Determine the RAC using the following matrix;

	Mishap Probability Category (MPC)				
		A	B	C	D
Health Hazard Severity Code	I	1	1	2	3
	II	1	2	3	4
	III	2	3	4	5
	IV	3	4	5	5

Appendix D
References

References

1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
2. Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.
3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.
4. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.
5. Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, October 15, 1990.
6. Army Regulation (AR) 385-10, The Army Safety Program, February 29, 2000.
7. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 10, 1998.
8. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
9. Technical Manual (TM) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.
10. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
11. Industrial Ventilation – A Manual of Recommended Practices, American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
12. ANSI Z358.1 – 2004, Emergency Eyewash and Shower Equipment.
13. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
14. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
15. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2004, “Ventilation for Acceptable Indoor Air Quality”.

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Ogdensburg Readiness Center
Ogdensburg, NY. 13669-1603

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 27, 2013

Bonus Environmental, LLC

TABLE OF CONTENTS

APPENDICES

January 27, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Ogdensburg, NY Readiness Center

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Ogdensburg Readiness Center located at 225 Elizabeth Street in Ogdensburg, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. No Health & Safety plans were available at Ogdensburg Readiness Center for review. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 13, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Ogdensburg Readiness Center is an Army National Guard armory, constructed in 1898, comprised of offices, locker rooms, storage rooms, a Drill hall, a boiler room, a break room, a classroom, a mess hall, and a former indoor firing range (currently used for storage). The point of contact for the approximately 25,992 ft² Ogdensburg Readiness Center is Mr. Non-Responsive Approximately two (2) full-time administrative personnel and one (1) maintenance personnel are employed at the Ogdensburg Readiness Center. A shop diagram depicting the locations of the operations identified during this industrial hygiene evaluation, as well as airflow patterns, is provided as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Fourteen (14) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project

Army National Guard – Ogdensburg Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
OburgRC-LW-1	11-13-12	Field Blank	---	< 12 *µg*
OburgRC-LW-2	11-13-12	Drill hall, west end, on floor	0.111	< 110
OburgRC-LW-3	11-13-12	Drill hall, east end, on floor	0.111	< 110
OburgRC-LW-4	11-13-12	Drill hall, northeast corner, on heat register	0.111	3,600
OburgRC-LW-5	11-13-12	Drill hall, southeast corner, top of vending machine	0.111	580
OburgRC-LW-6	11-13-12	Drill hall, west wall, center, on window sill	0.111	4,600
OburgRC-LW-7	11-13-12	Former indoor firing range, west end, on floor	0.111	2,200
OburgRC-LW-8	11-13-12	Former indoor firing range, east end, on floor	0.111	1,400
OburgRC-LW-9	11-13-12	Room 6, mess hall, top of Amnesty box	0.111	1,600
OburgRC-LW-10	11-13-12	1st floor, lobby, top of AED case	0.111	220
OburgRC-LW-11	11-13-12	Room 11, office, top of copy machine	0.111	260
OburgRC-LW-12	11-13-12	Break room, top of dart board video game	0.111	1,800
OburgRC-LW-13	11-13-12	Room 20, office, northeast corner, on window sill	0.111	2,200
OburgRC-LW-14	11-13-12	2nd floor, lobby, on heat register	0.111	360
OburgRC-LW-15	11-13-12	Classroom 24, northwest corner, top of light fixture	0.111	40,000

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range was being used for storage. It is unknown whether it had been previously remediated of residual lead contamination and it is uncertain if it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were

any signs posted restricting access to the area. Former range structures (such as the bullet trap) had been removed.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Ogdensburg Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified the following areas of peeling paint which could potentially pose a lead exposure hazard:

- Approximately 20 ft^2 of peeling gray paint in basement, northeast storage room;
- Approximately 400 ft^2 of peeling yellow paint in basement, room 3;
- Approximately 100 ft^2 of peeling white paint in basement, room 3;
- Approximately 20 ft^2 of peeling white paint in basement lobby;
- Approximately 300 ft^2 of peeling white paint in basement, southeast storage room;
- Approximately 300 ft^2 of peeling brown paint in basement, southeast storage room;
- Approximately 175 ft^2 of peeling yellow paint in basement, southwest storage room;
- Approximately 20 ft^2 of peeling blue paint in basement, room 10;
- Approximately 10 ft^2 of peeling white paint on the ceiling in room 14;
- Approximately 4 ft^2 of peeling white paint on the ceiling in room 13;
- Approximately 2 ft^2 of peeling white paint on the ceiling in the 2^{nd} floor lobby;
- Approximately 80 ft^2 of peeling white paint on the ceiling in room 22;
- Approximately 20 ft^2 of peeling white paint on the ceiling in room 20;
- Approximately 20 ft^2 of peeling white paint in 2^{nd} floor, northeast locker room;
- Approximately 40 ft^2 of peeling white paint in the 2^{nd} floor restroom.

Five (5) paint chip samples was collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. See table below for sample information:

Army National Guard – Ogdensburg Readiness Center
Paint Chip Samples

Sample #	*Sample Location*	*Color*	*Analytical Reporting Limit (%)*	*Analytical Results (%)*
OburgRC-PC-1	Basement, northeast storage	Gray	0.0073	11
OburgRC-PC-2	2^{nd} floor locker room	Yellow	0.0064	4.2
OburgRC-PC-3	Basement, southeast storage	Brown	0.0065	0.19
OburgRC-PC-4	Basement, room 10	Blue	0.0059	3.1
OburgRC-PC-5	2^{nd} floor, room 20	White	0.0058	0.093

Analysis indicated that each of the peeling paints collected contained detectable levels of lead. The paints are therefore each considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated

and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Ogdensburg Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC identified the following PACM's that were considered to be in poor or damaged condition:

- Approximately 25 ft^2 damaged plaster in basement restroom;
- Approximately 375 ft^2 of damaged plaster in the basement, southwest storage room;
- Approximately 125 ft^2 of damaged plaster in classroom 24.

One (1) bulk material sample of plaster was collected and submitted for analysis. Analytical results for these materials indicated "No Asbestos Detected". Asbestos bulk sample results are attached to this report as Appendix C.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Ogdensburg Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified the following areas of water-damaged building materials:

- Approximately 25 ft^2 damaged plaster in basement restroom;
- Approximately 375 ft^2 of damaged plaster in the basement, southwest storage room;
- Approximately 125 ft^2 of damaged plaster in classroom 24;
- Approximately 250 ft^2 of damaged brick walls in basement room 4;
- Approximately 450 ft^2 of damaged concrete floor in basement room 4;
- Approximately 600 ft^2 of damaged brick walls in basement, southeast storage room;
- Approximately 300 ft^2 of damaged concrete floor in basement, southeast storage room;
- Approximately 500 ft^2 of damaged stone walls in basement room 5B;
- Approximately 90 ft^2 of damaged brick walls in basement room 8A;
- Approximately 4 ft^2 of stained dropped-ceiling tile (DCT) in restroom 11A;
- Approximately 325 ft^2 of damaged brick walls in the Drill hall.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Ogdensburg Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within the Ogdensburg Readiness Center facility to be in fair-poor condition, based on residual lead dust concentrations as well as un-cleared piles of debris on the floors resultant from decaying walls.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Ogdensburg Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following interviews and observations, no ergonomic or indoor air quality concerns were noted.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Ogdensburg Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 8554 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 383 ppm to 442 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 0.4 ppm to 31.1 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Ogdensburg Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 70.9ºF to 74.3ºF and are considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Ogdensburg Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 25.6% to 37.1%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Ogdensburg Readiness Center Indoor Air Quality Measurements				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, east side of building (partly sunny, breezy)	383	0.4	29.2	42.3
Basement, room 6	404	5.2	34.1	71.2
Basement, boiler room	406	**31.1**	25.6	71.8
Drill Hall	395	3.2	34.3	72.9
Office room 11	420	4.6	32.6	74.3
Break room 14	430	3.4	30.9	73.4
1st floor lobby	414	4.7	31.9	73.0
2nd floor lobby	442	3.6	33.9	72.3
Office room 20	441	3.7	33.6	70.9
Classroom 24	432	3.5	37.1	70.9
2nd floor, west side locker room	392	3.1	32.8	73.9

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Ogdensburg Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Ogdensburg Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Basement restroom	10.9	5	Yes
Basement shower's	13.2	7	Yes
Basement, northeast storage	19.1	30	No
Room 2 (storage)	18.1	30	No
Room 3 (storage)	25.2	30	No
Basement lobby	6.2	10	No
Room 4 (storage)	8.2	30	No
Basement, southeast storage	9.1	30	No
Room 5 (storage)	0.6	30	No
Room 5A (storage)	36.2	30	Yes
Room 5B (storage)	19.5	30	No
Room 6 (mess hall)	23.3	10	Yes

Army National Guard – Ogdensburg Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Vault 1	Inaccessible		
Vault 2	Inaccessible		
Room 8A (storage)	25.3	30	No
Basement, southwest storage	8.4	30	No
Boiler room	56.4	30	Yes
Room 10 (storage)	16.0	30	No
Basement, northwest storage	12.9	30	No
1st floor lobby	24.2	10	Yes
Room 14 (break room)	63.5	10	Yes
Room 15 (recruiter's office)	Inaccessible		
Room 13 (office)	56.2	50	Yes
Room 11 (office)	11.2	50	No
Room 11A (restroom)	14.8	5	Yes
Room 12 (storage)	5.8	30	No
Drill Hall	21.6	30	No
Locker room (west side of Drill Hall)	3.2	7	No
Classroom 24	91.8	30	Yes
2nd floor lobby	5.6	10	No
Room 22 (office)	35.2	50	No
Room 20 (office)	39.9	50	No
2nd floor, northeast locker room	4.1	7	No
2nd floor restroom	15.0	5	Yes
Balcony	2.2	10	No

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Ogdensburg Readiness Center facility located at 225 Elizabeth Street in Ogdensburg, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 13, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Ogdensburg Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15.

2. Bonus Environmental, LLC identified several areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC identified PACM's (that analytical results confirmed to be non-asbestos-containing) that were considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified water-damaged and/or moldy building materials including plaster, bricks, stone walls, dropped-ceiling tiles, and concrete in several locations throughout the facility.

5. Bonus Environmental, LLC found the housekeeping practices within the Ogdensburg Readiness Center to be in fair-poor condition.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Ogdensburg Readiness Center. All were found to be within their acceptable ranges/limits.

8. Areas within the Ogdensburg Readiness Center facility were identified as improperly illuminated.

9. No Health & Safety programs were available for review at the Ogdensburg Readiness Center.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may

result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

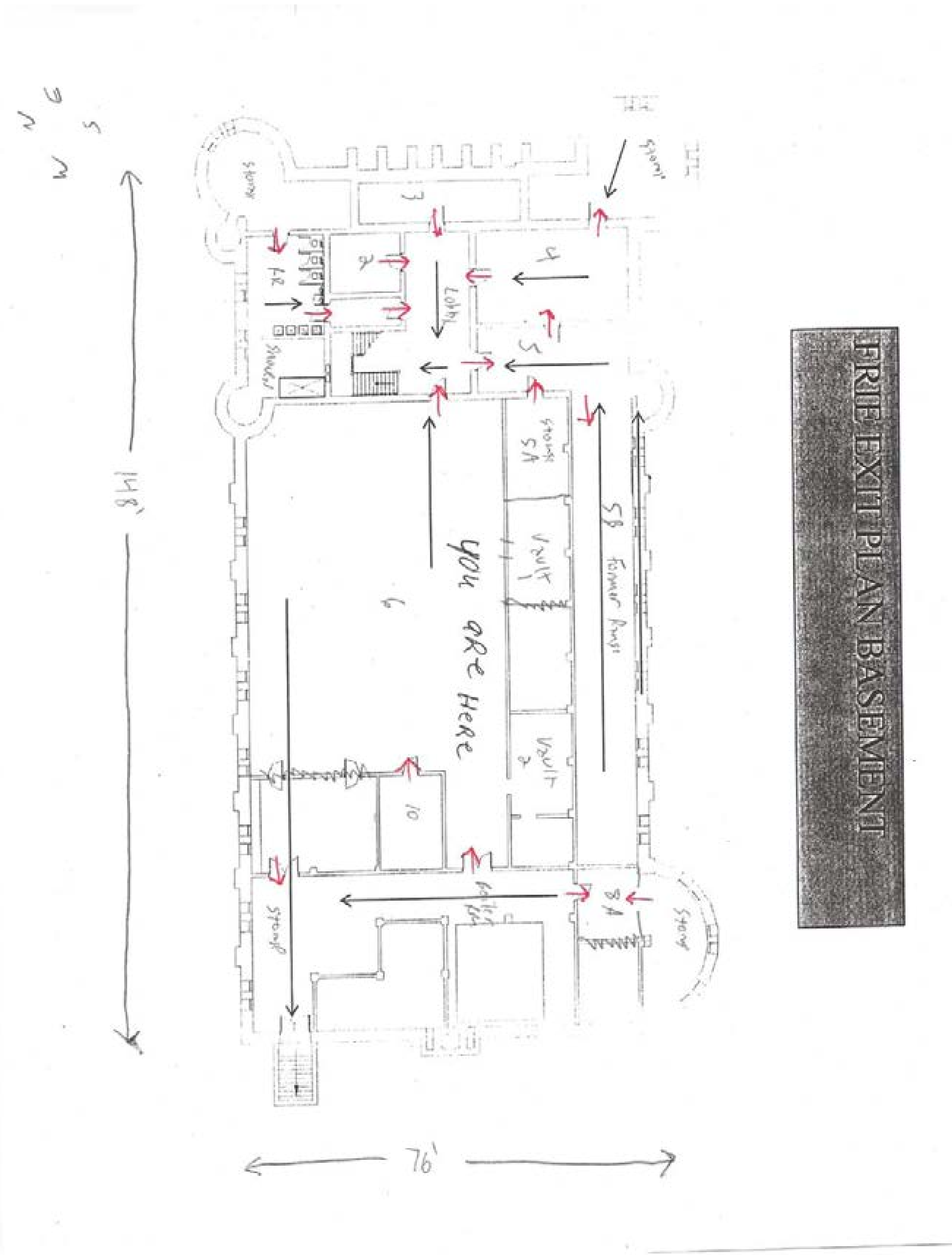
Non-Responsive

Principal
Bonus Environmental, LLC

Ogdensburg RC_12_Report.docx

Appendix A

Shop Diagram and Air Flow Patterns



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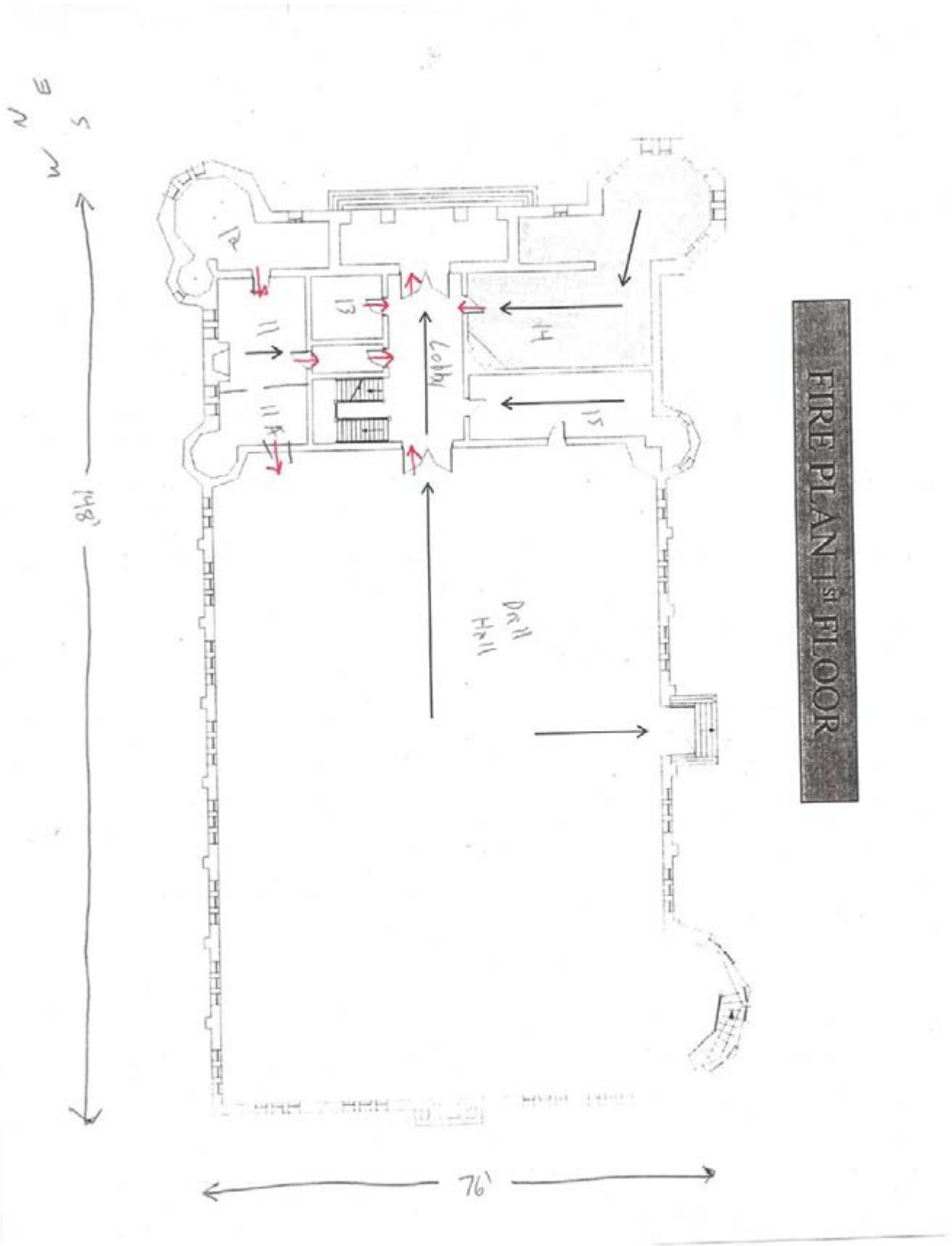
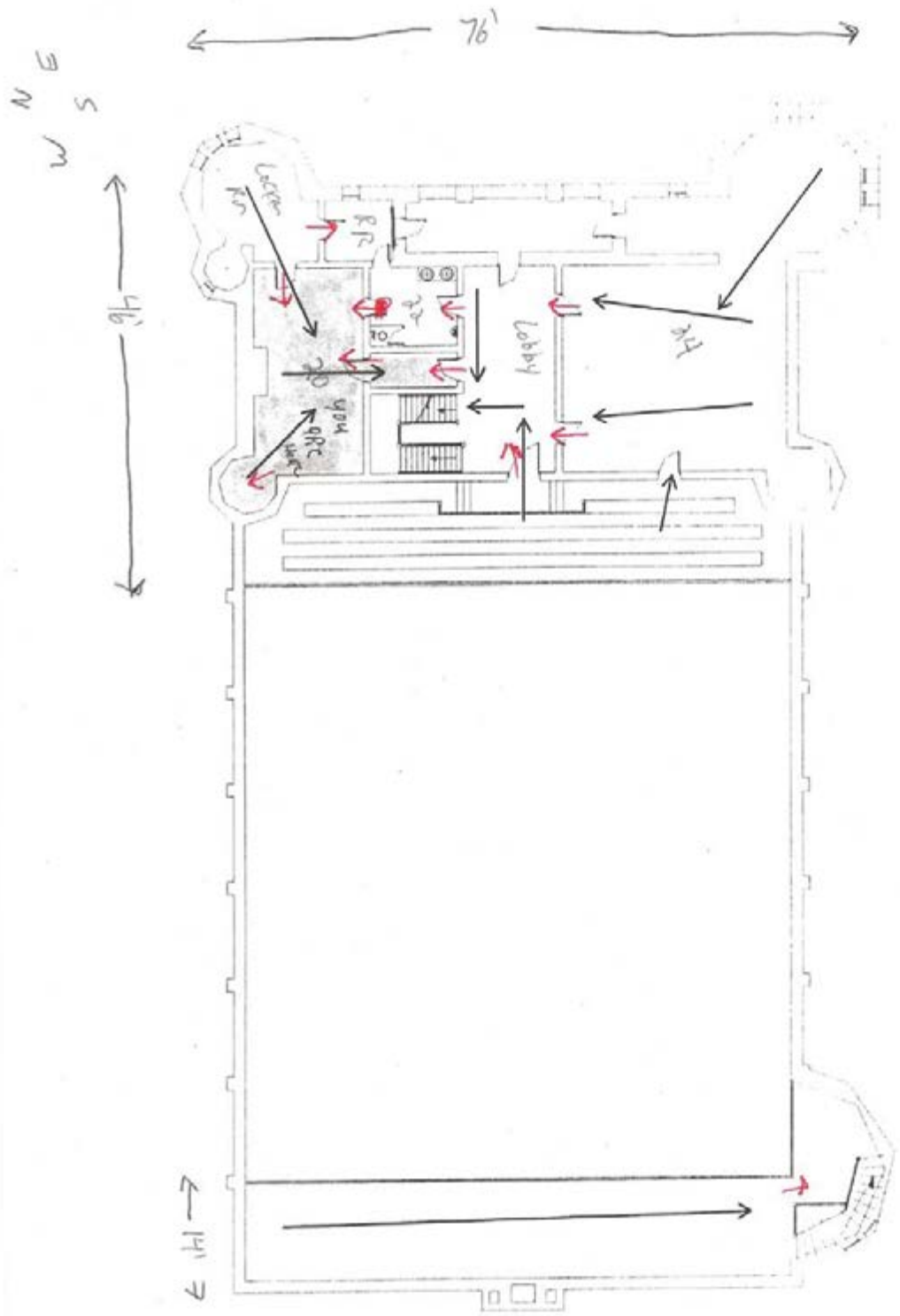




FIRE EXIT PLAN 2nd FLOOR

Appendix B

Lead Sample Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAP, LLC #100470

Client:	National Guard Bureau	**Job Name:**	Ogdensburg RC	**Chain Of Custody:**	514545
Address:	301-JH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Ogdensburg, NY	**Date Submitted:**	11/21/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/29/2012 **Report Date:** 11/29/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016453	ObugRC-PC-1	Flame	Paint Chip	****	N/A	0.0073	%Pb		11	%Pb	
13016454	ObugRC-PC-2	Flame	Paint Chip	****	N/A	0.0064	%Pb		4.2	%Pb	
13016455	ObugRC-PC-3	Flame	Paint Chip	****	N/A	0.0065	%Pb		0.19	%Pb	
13016456	ObugRC-PC-4	Flame	Paint Chip	****	N/A	0.0059	%Pb		3.1	%Pb	
13016457	ObugRC-PC-5	Flame	Paint Chip	****	N/A	0.0058	%Pb		0.093	%Pb	
13016458	ObugRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13016459	ObugRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016460	ObugRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016461	ObugRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	400	3600	ug/ft²	
13016462	ObugRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	64	580	ug/ft²	
13016463	ObugRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	510	4600	ug/ft²	
13016464	ObugRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	250	2200	ug/ft²	
13016465	ObugRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	160	1400	ug/ft²	
13016466	ObugRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	170	1600	ug/ft²	
13016467	ObugRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	25	220	ug/ft²	
13016468	ObugRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	29	260	ug/ft²	
13016469	ObugRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	200	1800	ug/ft²	
13016470	ObugRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	240	2200	ug/ft²	
13016471	ObugRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	40	360	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Ogdensburg RC	**Chain Of Custody:**	514545
Address:	301-1H Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Ogdensburg, NY	**Date Submitted:**	11/21/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/28/2012 **Report Date:** 11/29/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016472	ObugRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	4400	40000	ug/ft²	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Non-Responsive

Analy

Technical Manag Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514545

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Ogdensburg RC
2. Job Location: Ogdensburg, NY
3. Job #: 1011-15 P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive
5. Submitted by: Non-Responsive Signature:

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include Non-Responsive with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day	☒ Email: @ bonusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/30/12	☒ Fax: @us.army.mil
	☐ Results Required By Noon	☒ Verbal @us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Metals Analysis
☒ Pb Paint Chip 5 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 15 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Trap/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WATER (DW, WW, OTHER)	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
OburgRC-PC-1	Grey Paint	11-13-12					X			X						Date/Time: Contact: By:
-2	Yellow						X			X						
-3	Brown						X			X						
-4	SEE ATTACHED FIELD DATA SHEETS						X			X						
-5	White						X			X						Date/Time: Contact: By:
OburgRC-PLR-1	Plaster - Basement RR	11-13-12	PLM			X				X						
OburgRC-LW-1→15		11-13-12					X				X					Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11 / 21 / 12 @ 1125 Via: FEDEX By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 7991-5736-6925

Surface Sampling Field Data Sheet

Date Collected: 11-13-12 Job Name: Ogdensburg RC Company: Bonus Environmental, LLC

Job Number: 1061-15 Job Location: 225 Elizabeth St Phone Number: 989-779-7491

Contact Perso[redacted] ddress: Ogdensburg, NY Collected By [redacted]

COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
ObsrgRC-LW-1	Field Blank	—	—	Ghost wipe
-2	Drill Hall	Floor, west end	4"x4"	
-3	Drill Hall	Floor, east end		
-4	Drill Hall	NE corner, on heat register		
-5	Drill Hall	SE corner, top of vending machine		
-6	Drill Hall	west wall, center, on window sill		
-7	Former Indoor Firing Range	Floor, west end		
-8	Former Indoor Firing Range	Floor, east end		
-9	Rm 6 Mess Hall	top of Amnesty box		
-10	1st Fl Lobby	top of AED case		
-11	Rm 11 office	top of copy machine		
-12	Break Room	top of Dart board video game		
-13	Rm 20 office	NE corner window sill		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 345-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-13-12
Job Name: Ogdensburg RC
Company: Bonus Environmental, LLC
Job Number: 1061-15
Job Location: 225 Elizabeth St
Phone Number: 989-779-7686
Contact Person: Non-Responsive
Address: Ogdensburg, NY
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
OburgRC-LW-14	2nd Floor Lobby	on heat register	4"x4"	Ghost wipe
↓ ↓ -15	Classroom 24	NW corner, top of light fixture	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Asbestos Bulk Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	Job Name:	Ogdensburg RC	Chain Of Custody:	514545
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Ogdensburg, NY	Date Analyzed:	11/30/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13016473	ObugRC-Asb-1 PL	NAD	--	--	--	--	--	--	--	--	--	100	PL	White	Homogeneous	PC	
13016474	ObugRC-Asb-1 BC	NAD	--	--	--	--	--	--	--	--	--	100	BC	Gray	Homogeneous	PC	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director Non-Responsive

Analyst(s) Non-Responsive

NVLAP (101143-0) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

Bulk Sampling Survey Sheet

Page 1 of 1

Date Collected: 11-13-12
Job Number: 1061-15
Contact Per [redacted] Non-Responsive

Job Name: Ogdensburg RC
Job Location: ~~Ogdensb~~ 225 Elizabeth St
Address: Ogdensburg, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: [redacted] Non-Responsive
COC Number:

Sample Number	Homogenous Area ID	Type of Material	Sample Location	Friable	Condition of Material	Accessibility	Photo	Comments
ObwgRC-ASB-1	Surf	Plaster	Basement Restroom	☐ Yes ☐ No ☒ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☒ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514545

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Ogdensburg RC
2. Job Location: Ogdensburg, NY
3. Job #: 1061-15 PO #: W912K6-09-A-0003
4. Contact Perso [redacted] @ phone# [redacted]
5. Submitted by: [redacted] nature: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ In [redacted] h Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +- ☐ Results Required By Noon	☒ Em [redacted] onusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/30/12	☒ Fa [redacted] s.army.mil
		☒ Va [redacted] s.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 _____(QTY)
☐ Fiberglass _____(QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA _____(QTY)
☐ NIOSH 7402 _____(QTY)
☐ Other (specify _____) _____(QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 2 (QTY)
☐ EPA Point Count _____(QTY)
☐ NY State Friable 198.1 _____(QTY)
☐ Grav. Reduction ELAP 198.6 _____(QTY)
☐ Other (specify _____) _____(QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield _____(QTY)
☐ NY State PLM/TEM _____(QTY)
☐ Residual Ash _____(QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust _____(QTY)
☐ Quan. (s/area) Vacuum D5755-95 _____(QTY)
☐ Quan. (s/area) Dust D6480-99 _____(QTY)

TEM Water
☐ Qual. (pres/abs) _____(QTY)
☐ ELAP 198.2/EPA 100.2 _____(QTY)
☐ EPA 100.1 _____(QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples ____ °C)

Metals Analysis
☒ Pb Paint Chip 5 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 15 (QTY)
☐ *Pb Air _____(QTY)
☐ Pb Soil/Solid _____(QTY)
☐ Pb TCLP _____(QTY)
☐ Drinking Water ☐ Pb ____(QTY) ☐ Cu ____(QTY) ☐ As ____(QTY)
☐ Waste Water ☐ Pb ____(QTY) ☐ Cu ____(QTY) ☐ As ____(QTY)
☐ Pb Furnace (Media _____) _____(QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
☐ *Spore-Trap ____(QTY) ☐ Surface Vacuum Dust ____(QTY)
☐ *Surface Swab ____(QTY) ☐ Culturable ID Genus (Media ____) ____(QTY)
☐ *Surface Tape ____(QTY) ☐ Culturable ID Species (Media ____) ____(QTY)
☐ Other (Specify ____) ____(QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WATER/ OTHER	SCOPE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
ObvrgRC-PC-1	Gray Paint	11-13-12					X			X						Date/Time: Contact: By:
-2	Yellow						X			X						
-3	Brown						X			X						
-4	SEE ATTACHED FIELD DATA SHEETS						X			X						
-5	White						X			X						Date/Time: Contact: By:
ObvrgRC-ASB-1	Plaster - Basement RR	11-13-12	24 SC			X				X						
ObvrgRC-LW-1	15	11-13-12					X				X					Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11/21/12 @1125 Via: FEDEX [redacted]
2. Date/Time Analyzed: 11/30/12 @ ____ By (Print): Dee
3. Results Reported To: _____ Via: _____ Date: 11/30/12 Time: _____ Initials: PC
4. Comments: 7991-5736-6925

Appendix D

Photographs

Building exterior, looking southwest

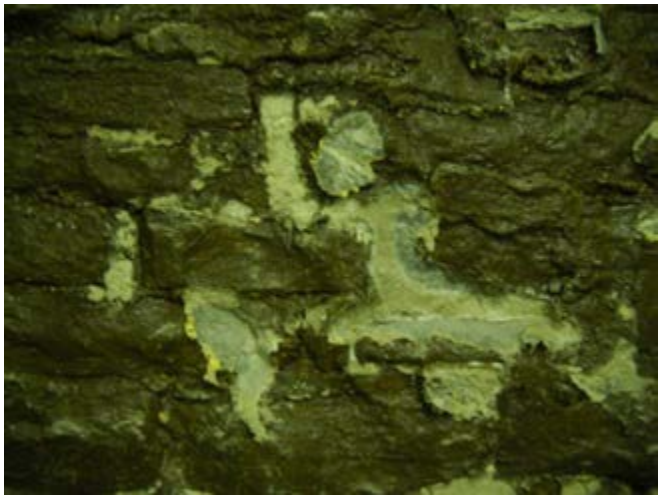
1st floor lobby

Drill Hall

Basement restroom, damaged plaster

Basement, northeast storage, peeling gray paint

Basement, room 3, water-damaged wall and peeling paints



Basement, southeast storage, peeling brown paint

Basement, former indoor firing range

Boiler room

Boiler room, emergency eyewash

Basement, room 10, peeling blue paint

Room 20, peeling white paint

Appendix E

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct 2011.

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

INDUSTRIAL HYGIENE SURVEY

Conducted on

READINESS CENTER
84 OLD ORANGEBURG ROAD
ORANGEBURG, NEW YORK 10962

ECS Project No. 14-4876

For

National Guard Bureau
Region North Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

ECS LLP
CAROLINAS

November 18, 2008

ECS CAROLINAS
Geotechnical • Construction Materials • Environmental

November 18, 2008

Ms Non-Responsive
National Guard Bureau Region North
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

Reference: Industrial Hygiene Survey
Readiness Centers (RC)
Orangeburg, New York
ECS Project No. 14-4876

Dear Ms Non-Responsive

ECS Carolinas, LLP (ECS) is pleased to provide the results of our Industrial Hygiene survey for the referenced facility. Our services were provided in accordance with Army National Guard work order number W912K6-08-F-0063, dated June 12, 2008 and the requirements of the National Guard Bureau Region North Industrial Hygiene Office "*Statement of Work*".

If there are questions regarding this report, or a need for further information, please contact us.

Respectfully submitted,

ECS CAROLINAS, LLP

Non-Responsive
Industrial Hygiene Project Manager

Non-Responsive
Principal Scientist

I:\Environ\Report\4800\4876 ANG IH\Orangeburg\4876 Orangeburg Report.doc

INDUSTRIAL HYGIENE SURVEY
READINESS CENTER
84 OLD ORANGEBURG ROAD
ORANGEBURG, NEW YORK 10962

TABLE OF CONTENTS

INDUSTRIAL HYGIENE SURVEY
READINESS CENTER
84 OLD ORANGEBURG ROAD
ORANGEBURG, NEW YORK

1.0 EXECUTIVE SUMMARY

ECS Carolinas, LLP (ECS) has completed an Industrial Hygiene Survey at the facility located at 84 Old Orangeburg Road in Orangeburg, New York. The report was prepared in general accordance with the *Statement of Work* provided by the National Guard Bureau Industrial Hygiene Region North. The objective of the survey was to identify and measure the existence and extent of potentially hazardous operations or conditions at the Army National Guard (ARNG) facilities identified in the work order. The surveys were performed to establish a baseline of workplace conditions or to update a previous survey and employee exposure histories.

The survey involved a facility reconnaissance and sampling of the Readiness Center. Readiness Centers perform limited field level maintenance of various ARNG vehicles and equipment required for the supported units. Orangeburg RC included a five (5) bay maintenance area, a parts supply area, offices and a break room. Of the five maintenance bays, only four (4) were usable. At the time of the survey, several members of the unit were deployed and the shop was not operating at full capacity. The point of contact for the Orangeburg RC facility was Jeffery Caston.

Lighting measurements conducted during the survey indicated the illumination levels in the vehicle maintenance area, Orderly Room, Washroom, NCO Hallway, and in the Entryway are below the required lighting levels.

The physical facility and the site health and safety plans were reviewed. Some written safety programs were missing or not provided to ECS. This missing information should be prepared for the facility and provided during the next facility survey. During the physical assessment of the facility, the following items were noted:

Vehicle Maintenance Area:

- Peeling and chipped paint present.
- Two (2) Local Exhaust Ventilation (LEV) drops present out of the four (4) working bays.
- PPE present in work area for workers use-
    - Ear Protection: Earplugs
    - Proper protective clothing: (steel-toed shoes, long sleeves)
        - Safety glasses are not required.
- Material Safety Data Sheets (MSDS) were observed in the area.

- Fire extinguishers are present and are current with routine inspections.

Parts Supply Room:

- General parts and supply storage area.
- No general ventilation system is present.
- Generally clean work area.

Tools Storage:

- Tool storage area.
- No general ventilation is present.
- Generally clean storage area.

Storage Room:

- General materials storage room.
- Fire extinguisher inspection has expired.
- No general ventilation is present.
- Generally clean work and storage area.

Administrative Areas (Office's, Break room, Men's and Women's Restrooms):

- Administrative controls present (posted training documents, warning signs, best work practices, fire evacuation plans)
- Fire extinguishers present and are current with routine inspections with the exception of one.
- One (1) window air conditioning unit is located in the Recruiter's office.
- No general ventilation is present.
- Generally clean areas.

2.0 INTRODUCTION

2.1 Scope of Work

ECS Carolinas, LLP (ECS) has completed an Industrial Hygiene Survey at the facility located at 84 Old Orangeburg Road, in Orangeburg, New York. The report was prepared in general accordance with the *Statement of Work* provided by the National Guard Bureau Industrial Hygiene Region North. The objective of the survey was to identify and measure the existence and extent of potentially hazardous operations or conditions at the Army National Guard (ARNG) facilities identified in the work order. The surveys were performed to establish a baseline of workplace conditions or update a previous survey and employee exposure histories.

2.2 Facility Information and Description

The survey involved a facility reconnaissance and sampling of Orangeburg RC. Readiness Centers (RC) serve as recruitment facilities and administration offices that maintain a garage or mechanic shop to perform simple repairs on various ARNG vehicles and equipment for the supported units. Orangeburg RC included a five (5) bay maintenance area, a parts supply area, offices and break room, equipment and storage rooms. The mechanic shop conducts limited vehicle maintenance for unit support. At the time of the survey, several members of the unit were deployed, approximately four (4) persons were in the center and the shop was not operating at full capacity. The point of contact for the Orangeburg RC facility was Jeffery Caston.

3.0 SAMPLING

3.1 Lead Wipes

Wipe samples were collected for lead dust in the administrative areas and mechanic shop of the garage in the facility. Sampling was conducted to determine if cross contamination was occurring in the non-maintenance areas of the facility. The Indoor Firing Range (IFR) at this facility has been converted to another use on the site. Lead wipes were collected according to the scope of work for the items still present in the IFR. The lead wipe results can be seen in the following table:

Table 3.1.1 Lead Wipe Results

Sample Number	Sample Location	Results ($\mu g/ft^2$)
LW-1	Drill Hall-Left front corner	210
LW-2	Drill Hall-Behind Soda machine	180
LW-3	Back exit door floor	320
LW-4	Drill Hall-Floor at Fire Hose	1,100
LW-5	Drill Hall-Center Floor	490

Sample Number	Sample Location	Results (µg/ft²)
LW-6	Drill Hall-Supply Room	<110
LW-7	Garage Floor-Front	2,100
LW-8	Garage-Parts Cage	120
LW-9	Garage Parts Cage-Floor	1,000
LW-10	Company Commander's Office	<110
LW-11	Hallway outside Recruiting Office	<110
LW-12	Outside Firing Range-Back	1,700
LW-13	Mop Room Main Hallway	520
LW-14	Orderly Room	<110
LW-15	First Sergeant's Office	<110
LW-16	Old Firing Pit-Floor	23,000
LW-17	Kitchen	<110
LW-18	NCO Club	<110
LW-19	Basement Storage-Janitor's Closet	15,000
LW-20	Mess Room	<110

3.2 Additional Sampling Information

Since welding operations and parts washing, are not conducted at this facility samples were not collected for welding fumes, volatile organic compounds or acid gases during the survey.

Indoor air quality measurements including temperature, relative humidity and carbon dioxide were collected in various locations throughout the facility and are presented in the following table:

Table 3.2.1 Indoor Air Quality (IAQ) Meter Measurements

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)
Basement Bullet Shop	73.8	63.7	535
Hallway Outside Janitor's Closet	74.5	62.1	385
Server Room Work Station	75.0	60.7	392
Orderly's Office	76.7	45.1	432
Recruiter's Office	74.5	39.6	490
Drill Hall	84	44.9	400
Shop	82.4	52.4	452

The American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) has determined that a carbon dioxide level greater than 1000 ppm indicates that not enough outdoor air is coming into the building to dilute the carbon dioxide level. The carbon dioxide

levels measured at the Orangeburg RC facility are below those limits, indicating that air is being circulated properly throughout the building.

ASHRAE standards state that systems within the building should establish a relative humidity in occupied space to be 60% or less. The levels measured at the Orangeburg RC facility indicate that the relative humidity is below the required standard for indoor air quality.

Personnel samples measuring airborne lead levels were collected from within the breathing zone of two staff members on site at the Orangeburg RC facility. Each employee was monitored for approximately six hours. Laboratory analytical results indicate that both air samples were below the OSHA permissible exposure limit (PEL) of 0.05mg/m^3. Results have been listed in the following table:

Table 3.2.2 Personnel Samples-Lead

Staff Member being Monitored	Pump ID	Sample Collection Times (Hours)	Total Time (minutes)	Total Liters (L) collected	Lab Results Above Permissible Exposure Limit
Non-Responsive [redacted]	5134	1030-1630	360	885.6	No
[redacted]	3051	1030-1630	360	921.6	No

4.0 VENTILATION ASSESSMENT

4.1 General Ventilation

General building ventilation is provided to the administrative areas of the building through wall uni-vent units. In the maintenance areas cooling is provided by the roll-up doors and fans.

5.0 NOISE DOSIMETRY

Noise sampling was not conducted during the survey; active heavy vehicle maintenance does not occur on site.

6.0 LIGHTING EVALUATION

Illumination levels were recorded in each area in closed door conditions and compared to the ANSI minimum lighting requirement (ANSI/IESNA RP-1-04). Recorded illumination measurements are presented in the following table and are presented on the illumination plan in Appendix I.

Table 6.1 Illumination Measurements

Location	Measured Illumination Level in Foot Candles	Required Illumination	Requirement Met?

Industrial Hygiene Survey
Readiness Center
Orangeburg, New York 10962
ECS Project No. 14-4876

	(FC)	Level	
First Sergeant's Office - Desk	13.1	50	No
Administration Training Room Desk	26.6	50	No
Vehicle Maintenance Area – Walkway	20.6	75	No
Orderly Room - Desk	32.1	50	No
Company Commander's Office - Desk	27.9	50	No
Entryway Hallway	10.0	10	Yes
Washroom	3.9	5	No
NCO Room	11.2	50	No
Dining Room	81.7	10	Yes
Kitchen	64.1	50	Yes
Rear Hallway to Exit	18.3	5	Yes
Main Hallway	13.3	5	Yes
Main Entryway	23.9	10	Yes
Recruiting Office	39.8	5	Yes
Basement- Storage	2.1	30	No
Hallway Outside Janitor's Closet	31.9	5	Yes
Boiler Room	4.5	30	No
Locker Room	15.0	7	Yes
Server Room Work Station	2.0	30-50	No
Supply Room	25.3	30	No
Drill Hall	40.2	50	No
Vehicle Maintenance Area – Work Station	25.2	75	No

7.0 REVIEW OF SAFETY PLANS AND POLICIES

7.1 Written Safety Plans

ECS reviewed on-site health and safety plans during our site visit. Plans were not available for review during the site visit. Below, is a list of plans recommended for this facility:

Personal Protective Equipment (PPE) Requirements
Fire Evacuation Plans

7.2 Personal Protective Equipment (PPE)

Written information could not be made available when requested for review by ECS during the site visit. Hearing protection: ear plugs, have been provided to staff and may be used at their own discretion. Long sleeved shirts and steel-toed boots are recommended for staff members working in the vehicle maintenance area. No additional information was available for review indicating what PPE was a requirement for the site.

8.0 PHYSICAL CONDITIONS & EMPLOYEE INTERVIEWS

ECS observed damaged and peeling paint in the garage area. One paint chip bulk sample was collected and sent to AMA Analytical Laboratories lead analysis.

Oily rags and spill pads were noted in regular trash receptacles. A designated receptacle properly labeled with "Flammable Materials" should be made available. A designated smoking area with proper cigarette receptacles should also be made available to prevent fire hazards.

ECS observed few materials in the Orangeburg RC facility that have the potential to be asbestos containing of materials identified to be in damaged condition. A description of the materials, location(s), and approximate quantities are presented below:

Table 8.1 Asbestos Summary Table

Description of Material	Location(s)	Approximate Quantity
White 9"x9" Floor Tile/Mastic	Front Entry Walkway	120 SF
Boiler Jacket Insulation	Boiler Room	100 SF

The results of the materials sampled were;

Table 8.2 Bulk Sample Results for Asbestos

Sample Description	Results
9" x 9" White Floor Tile & Mastic	2% Chrysotile asbestos
Boiler jacket insulation	No Asbestos Detected

9.0 FINDINGS AND CONCLUSIONS

Following are the findings of this Industrial Hygiene Survey:

- Wipe samples collected for lead dust in the administrative areas of the facility indicated that >200 µg/ft^2 of lead was detected in nine (9) out of the twenty (20) wipe samples collected. These results are above the NBG Region North IH office Guidelines of the acceptable level of 200 µg/ft^2. The areas with higher levels of lead dust were located in the new/old firing ranges, the drill hall. the garage area, and the basement and janitor/mop closets. Administrative office areas did not seem to have elevated levels of lead dust.

- Oily rags and spill pads were noted in regular trash receptacles. A designated receptacle properly labeled with "Flammable Materials" should be made available. Risk assessment rankings are as follows:.

- Lighting measurements conducted during the survey indicated the illumination levels in the vehicle maintenance and other work areas are below the required levels for workplace lighting.

- A fire extinguisher noted in the storage room did not have a current inspection. Fire extinguishers should be inspected regularly on the site and inspections should be kept current.

- Written safety programs were missing or not provided to ECS. This missing information should be prepared for the facility and provided during the next facility survey.

10.0 REFERENCES

Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration.

Lead - (29 CFR 1910.1025(h))

American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2008 Edition

Industrial Ventilation: A Manual of Recommended Practice for Design, 25th Edition

Georgia Army National Guard: Standard Army Safety and Occupational Health Inspection Checklist; 1 October 1999 Edition

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Ventilation for Acceptable Indoor Air Quality, 62-1-2007.

National Emission Standard Hazardous Air Pollutants (NESHAP) - The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3))

Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM)

The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation

29 CFR 1910.1000 Air Contaminants, Table Z-1, Occupational Safety and Health Administration, US DOL, Washington, DC

ANSI RP-1-04, American National Standard Practice for Office Lighting, 2004

ANSI RP-7-01, Lighting Industrial Facilities, 2001

Industrial Ventilation, A Manual of Recommended Practice, 25th Edition, ACGIH, 2004

2008 TLVs and BEIs, ACGIH, 2006

DA PAM 40-501, Hearing Conservation Program, Department of the Army, 1998

ANSI/ASHRAE 55-204

ANSI/ASHRAE 62.1-2007

APPENDIX I

FIGURES

UNAVAILABLE

APPENDIX II

PHOTOGRAPHS

APPENDIX III

LEAD RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead See aihaaccap.org for details
100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory	**Chain Of Custody:**	159404		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	84 Old Orangeburgh Road; Orangeburgh, New York	**Date Submitted:**	7/28/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	[redacted]		
		P.O. Number:	Not Provided	**Date Analyzed:**	8/1/2008	**Report Date:**	8/1/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0873448	1A	Flame	Air	922	N/A	3.25	ug/m³	< 3.3	ug/m³	
0873449	2A	Flame	Air	886	N/A	3.39	ug/m³	< 3.4	ug/m³	
0873450	3A	Flame	Air Blank	0	N/A	3.00	ug/m³	< 3	ug	
0873451	4A	Flame	Paint Chip	****	N/A	0.01	%Pb	0.42	%Pb	
0873452	1	Flame	Wipe	****	0.108	111.52	ug/ft²	210	ug/ft²	
0873453	2	Flame	Wipe	****	0.108	111.52	ug/ft²	180	ug/ft²	
0873454	3	Flame	Wipe	****	0.108	111.52	ug/ft²	320	ug/ft²	
0873455	4	Flame	Wipe	****	0.108	111.52	ug/ft²	1100	ug/ft²	
0873456	5	Flame	Wipe	****	0.108	111.52	ug/ft²	490	ug/ft²	
0873457	6	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	
0873458	7	Flame	Wipe	****	0.108	111.52	ug/ft²	2100	ug/ft²	
0873459	8	Flame	Wipe	****	0.108	111.52	ug/ft²	120	ug/ft²	
0873460	9	Flame	Wipe	****	0.108	111.52	ug/ft²	1000	ug/ft²	
0873461	10	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	
0873462	11	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	
0873463	12	Flame	Wipe	****	0.108	111.52	ug/ft²	1700	ug/ft²	
0873464	13	Flame	Wipe	****	0.108	111.52	ug/ft²	520	ug/ft²	
0873465	14	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	
0873466	15	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA Accredited Laboratory — Environmental Lead — See aihaaccap.org for details — 100470

NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory	**Chain Of Custody:**	159404
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation Havre de Grace, Maryland 21078	**Job Location:**	84 Old Orangeburgh Road; Orangeburgh, New York	**Date Submitted:**	7/28/2008
		Job Number:	14-4876	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	8/1/2008
Attention:	[redacted]			**Report Date:**	8/1/2008

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0873467	16	Flame	Wipe	****	0.108	111.52	ug/ft²	23000	ug/ft²	
0873468	17	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	
0873469	18	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	
0873470	19	Flame	Wipe	****	0.108	111.52	ug/ft²	15000	ug/ft²	
0873471	20	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.

NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted] Non-Responsive

An AIHA (#100470), NVLAP (101143-0), and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159404

Mailing/Billing Information:
1. Client Name: National Guard Northern Unit
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: _____ Fax #: _____

Submittal Information:
1. Job Name: National Guard Armory
2. Job Location: 84 Old Orangeburgh Rd. Orangeburgh New York
3. Job #: 14-4876 P.O. #:
4. Contact Person: [redacted] @ phone # 845-444-4360
5. Submitted by: [redacted] Signature: [redacted]

☒ Please include COC/field data sheets with results.

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: 8/4/08 @ 1700 ☐ Immd. ☐ 24hr ☐ 48hr ☐ 72hr ☒ 5 Day + ☐ Immd. After-Hours* ☐ 24hr After-Hours* ☐ Night* (*must be pre-scheduled)
☐ Verbals: _____ @ cell # _____ ☐ Fax Copy: _____ @ fax # _____ ☒ Email [redacted] @ ECSlimited.com

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
☐ NIOSH 7400_____(QTY)
☐ Fiberglass _____(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
☐ AHERA _____(QTY)
☐ NIOSH 7402 _____(QTY)
☐ Other (specify_____)_____(QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 87 (QTY)
☐ EPA Point Count _____(QTY)
☐ NY State Friable 198.1 _____(QTY)
☐ Grav. Reduction ELAP 198.6_____(QTY)
☐ Other (specify_____)_____(QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield _____(QTY)
☐ NY State PLM/TEM _____(QTY)
☐ Residual Ash _____(QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust_____(QTY)
☐ Quan. (s/area) Vacuum D5755-95 _____(QTY)
☐ Quan. (s/area)Dust D6480-99_____(QTY)
TEM Water
☐ Qual. (pres/abs)_____(QTY)
☐ ELAP 198.2/EPA 100.2_____(QTY)
☐ EPA 100.1_____(QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples _____°C)

Lead Analysis
☒ Paint Chip 1 (QTY)
☒ Dust Wipe (wipe type OSHA) 20 (QTY)
☒ Air 3 (QTY)
☐ Soil/Solid _____(QTY)
☐ TCLP_____(QTY)
☐ Drinking Water _____(QTY)
☐ Waste Water_____(QTY)
☐ Dust Wipe Furnace (wipe type _____)_____(QTY)

Mold - Direct Microscopic Analysis
☐ Spore-Trap _____(QTY) ☐ Bulk _____(QTY)
☐ Surface Swab _____(QTY) ☐ Surface Vacuum Dust _____(QTY)
☐ Surface Tape _____(QTY) ☐ Other (Specify_____)_____(QTY)

SAMPLE INFORMATION / **ANALYSIS** / **MATRIX**

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
1A	SSG. Abbate	7/15	922					X		X						
2A	SSG CATORE	7/15	886					X		X						
3A	Blank	7/15	—					X		X						
4A	Maintenance area	7/15	—	1000 SF				X			X					
5A	Front Entry way	7/15		40SF			X				X		white 9"x9" FT/Mat			
5B	Front Entry way	7/15		"			X				X		"		"	
6A	Boiler Room Entry	7/15		100 SF			X				X					
6B	"	7/15		"			X				X					
6C	"	7/15		"			X				X					
1	Drill Hall	7/15		IF Front Corner Behind Soda			X	X				X				
2	Drill Hall	7/15					X	X				X				
3	Back Entrance	7/15		Floor			X	X				X				
4	Drill Hall	7/15		Floor Fire Hose			X	X								

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: 7/30/08 Contact: KS By: MS
All wipe areas = 100cm²
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 7/29/08 @ 1030 Via: FedEx By: [redacted]
2. Date/Time Analyzed: ___/___/___ @ ___ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ___/___/___ Time: _____ Initials: _____
4. Comments: _____

Industrial Hygiene Survey
Readiness Center
Orangeburg, New York 10962
ECS Project No. 14-4876

APPENDIX IV

ASBESTOS RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	National Guard Armory	**Chain Of Custody:**	159404
Address:	301-lH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	84 Old Orangeburgh Road; Orangeburgh, New York	**Date Analyzed:**	8/1/2008
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0873472	5A FT	2	2	--	--	--	--	--	--	--	--	98	Off-White	Homogeneous	LBP	
0873473	5B FT	2	2	--	--	--	--	--	--	--	--	98	Off-White	Homogeneous	LBP	
0873474	5A M	NAD	--	--	--	--	--	--	--	--	--	100	Black	Homogeneous	LBP	
0873475	5B M	NAD	--	--	--	--	--	--	--	--	--	100	Black	Homogeneous	LBP	
0873476	6A	NAD	--	--	--	--	30	--	--	--	--	70	White	Homogeneous	LBP	
0873477	6B	NAD	--	--	--	--	30	--	--	--	--	70	White	Homogeneous	LBP	
0873478	6C	NAD	--	--	--	--	25	--	--	--	--	75	White	Homogeneous	LBP	

An AIHA (#100470), NVLAP (101143-0), and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP® 101143-0

Client:	National Guard Bureau	**Job Name:**	National Guard Armory	**Chain Of Custody:**	159404
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	84 Old Orangeburgh Road; Orangeburgh, New York	**Date Analyzed:**	8/1/2008
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

[redacted]

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AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159404

Mailing/Billing Information:
1. Client Name: National Guard Northern Unit
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: ______ Fax #:

☒ Please include COC/field data sheets with results
Date & Time Results Required: 8/4/08 @ 1700
☐ Verbals: ______ @ cell #

Submittal Information:
1. Job Name: National Guard Armory
2. Job Location: 8 ... Newburgh New York
3. Job #: 14-4476
4. Contact Person [redacted] P.O. #: ______ @ phone # 564-444-7360
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):
☐ Immd. ☐ 24hr ☐ 48hr ☐ 72hr ☒ 5 Day + ☐ Immd. After-Hours* ☐ 24hr After-Hours* ☐ Late-Night* (*must be pre-scheduled)
☐ Fax Copy: ______ @ fax # ______ ☒ Email Co[redacted] @ ECSlimited.com

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity ______ in a 25mm 37mm
☐ NIOSH 7400 ______ (QTY)
☐ Fiberglass ______ (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity ______ in a 25mm 37mm
☐ AHERA ______ (QTY)
☐ NIOSH 7402 ______ (QTY)
☐ Other (specify ______) ______ (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 5/7 (QTY)
☐ EPA Point Count ______ (QTY)
☐ NY State Friable 198.1 ______ (QTY)
☐ Grav. Reduction ELAP 198.6 ______ (QTY)
☐ Other (specify ______) ______ (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield ______ (QTY)
☐ NY State PLM/TEM ______ (QTY)
☐ Residual Ash ______ (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust ______ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ______ (QTY)
☐ Quan. (s/area)Dust D6480-99 ______ (QTY)
TEM Water
☐ Qual. (pres/abs) ______ (QTY)
☐ ELAP 198.2/EPA 100.2 ______ (QTY)
☐ EPA 100.1 ______ (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples ______ °C)

Lead Analysis
☒ Paint Chip 1 (QTY)
☒ Dust Wipe (wipe type 5/1/1A) 2 D (QTY)
☒ Air ______ (QTY)
☐ Soil/Solid ______ (QTY)
☐ TCLP ______ (QTY)
☐ Drinking Water ______ (QTY)
☐ Waste Water ______ (QTY)
☐ Dust Wipe Furnace (wipe type ______) ______ (QTY)

Mold - Direct Microscopic Analysis
☐ Spore-Trap ______ (QTY) ☐ Bulk ______ (QTY)
☐ Surface Swab ______ (QTY) ☐ Surface Vacuum Dust ______ (QTY)
☐ Surface Tape ______ (QTY) ☐ Other (Specify ______) ______ (QTY)

SAMPLE INFORMATION / ANALYSIS / MATRIX

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WIPE AND OTHER	SPORE TRAP	TAPE	SWAB
1A	SSG Abbate	7/15	922					X		X						
2A	SSG Calterre	7/15	886					X		X						
3A	Blank	7/15	—					X		X						
4A	Maintenance area	7/15	-	1000 SF				X			X					
5A	Front Entryway	7/15		40 SF			X				X	white 4"x4" E/M				
5B	Front Entry way	7/15		"			X				X	"				
6A	Boiler stack	7/15		100 SF			X				X					
6B	"	7/15		"			X				X					
6C	"	7/15		"			X				X					
1	Drill Hall	7/15		If Guidance			~~X~~	~~X~~				X				
2	Drill Hall	7/15		Behavior Code			~~X~~	~~X~~				X				
3	Back Exterior	7/15		Floor			~~X~~	~~X~~				X				
4	Drill Hall	7/15		Floor Fire Hose			~~X~~	~~X~~				X				

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: ______ Contact: ______ By:
Date/Time: ______ Contact: ______ By:
Date/Time: ______ Contact: ______ By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 7/23/08 @ 1030 Via: FedEx By (Print): [redacted]
2. Date/Time Analyzed: 8/4/08 @ 16:00 By (Print): LOM BO[redacted]
3. Results Reported To: Robert Smith Via: Email Da[redacted]
4. Comments: ______ Initials: [redacted]

BEST AVAILABLE COPY

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159396

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301 Old Bay Lane
3. Address 2: Havre de Grace, Md
4. Address 3:
5. Phone #: 336 455 2558 Fax #:

Submittal Information:
1. Job Name: RC #817, Spooner LTE
2. Job Location:
3. Job #: P.O. #:
4. Contact Perso [redacted] @ phone # 336 455 2558
5. Submitted by: [redacted] Signature: [redacted]

☐ Please include COC/field data sheets with results

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: 8/4/08 @ 1700 ☐Immd. ☐24hr ☐48hr ☐72hr ☒5 Day + ☐Immd. After-Hours* ☐24hr Afte [redacted] ate-Night* (*must be pre-scheduled)
☐ Verbals: @ cell # ☐ Fax Copy: @ fax # ☐ Email Cop [redacted] @ ei1.com

Asbestos Analysis
PCM Air - Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 2 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Lead Analysis
☒ Paint Chip 1 (QTY)
☒ Dust Wipe (wipe type) 8 (QTY)
☒ Air 1 (QTY)
☐ Soil/Solid (QTY)
☐ TCLP (QTY)
☐ Drinking Water (QTY)
☐ Waste Water (QTY)
☐ Dust Wipe Furnace (wipe type) (QTY)

Mold - Direct Microscopic Analysis
☐ Spore-Trap (QTY) ☐ Bulk (QTY)
☐ Surface Swab (QTY) ☐ Surface Vacuum Dust (QTY)
☐ Surface Tape (QTY) ☐ Other (Specify) (QTY)

SAMPLE INFORMATION

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WIPE AND OTHER	SPORE TRAP	TAPE	SWAB
817-B-3	TSI	7/24/08	—	—			X				X					
817-B-2	Ceiling Tile		—	—			X				X					
817-B-1	Paint		—	—				X			X					
817-A-1	Vault		1085.2	—				X		X						
817-A-2	Range		1109.3	—				X		X						
817-A-3	Blank		0	—				X		X						
817-S-1	Vault		—	296 in²				X								X
817-S-2	LR/Range		—	200 in²				X								X
817-S-3	LR/Range		—	100 in²				X								X
817-S-4	Kitchen		—	162 in²				X								X
817-S-5	Blank		—	0 in²				X								X
817-S-6	Heater Lb		—	168 in²				X								X
817-S-7	Office Cabinet		—	360 in²				X								X
817-S-8	[redacted] Handrail		—	60 in²				X								X

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY (CUSTODY)
1. Date/Time RCVD: 8/4/08 @ 5:00 Via: Drop
2. Date/Time Analyzed: 8/4/08 @ 16:20 By (Print): [redacted] Non-Responsive
3. Results Reported To: Vinee Maisto Via: Email Date: 8/4/08 Init: Initials: [redacted] Non-Responsive
4. Comments:

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Orangeburg Readiness Center
Orangeburg, NY 10962-1128

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 10, 2013

Bonus Environmental, LLC

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APPENDICES

January 10, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Orangeburg Readiness Center, Orangeburg, NY 10962-1128

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Orangeburg Readiness Center, located at 84 Old Orangeburg Road in Orangeburg, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on October 31, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Orangeburg Readiness Center is an Army National Guard armory comprised of offices, classrooms, locker rooms, storage rooms, a drill hall, supply rooms, a boiler room, maintenance bays, a kitchen, a mess hall, and a former indoor firing range. The point of contact for the approximately 26,750 ft² Orangeburg Readiness Center is Mr. Non-Responsive Five (5) full-time administrative personnel are employed at the Orangeburg Readiness Center. No Health and Safety programs were available for review during the survey, although Superintendant Mr. Non-Responsive stated that he believed current applicable programs include Hazcom, personal protective equipment (PPE), and Respiratory Protection. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twelve (12) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Orangeburg Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
Orangeburg RC-LW-1	10-31-12	Field Blank	---	< 12 μg
Orangeburg RC-LW-2	10-31-12	Drill Hall, on center of floor	0.111	190
Orangeburg RC-LW-3	10-31-12	Drill Hall, on window sill	0.111	150
Orangeburg RC-LW-4	10-31-12	Drill Hall, on filing cabinet	0.111	< 110
Orangeburg RC-LW-5	10-31-12	Drill Hall, on top of electrical panel #1	0.111	12,000
Orangeburg RC-LW-6	10-31-12	Drill Hall, on top of work table	0.111	< 110
Orangeburg RC-LW-7	10-31-12	Kitchen, on top of heater	0.111	330
Orangeburg RC-LW-8	10-31-12	Former Indoor Firing Range, bullet trap area	0.111	18,000
Orangeburg RC-LW-9	10-31-12	Former Indoor Firing Range, on top of light fixture	0.111	21,000
Orangeburg RC-LW-10	10-31-12	Former Indoor Firing Range, on exhaust fan grill	0.111	8,000
Orangeburg RC-LW-11	10-31-12	Women's Locker Room, on top of locker #68	0.111	< 110
Orangeburg	10-31-12	Company Commander's Office, on air conditioning unit	0.111	< 110

Army National Guard – Orangeburg Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
RC-LW-12				
Orangeburg RC-LW-13	10-31-12	Maintenance Bay 2, on top of flammables cabinet	0.111	1,000

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range is currently used for storage. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area. The bullet trap was not still in the "bullet trap area".

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Orangeburg Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified several areas of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling white paint in the Kitchen and the Hallway; peeling beige paint in the Drill Hall, Women's Locker Room, Locker Room and the Hallway; peeling green paint in the Former Indoor Firing Range. Three (3) paint chip samples were collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. Analysis indicated that each of the peeling paints collected contained detectable levels of lead. The paints are therefore considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Orangeburg Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Orangeburg Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified approximately 10 ft² of water-stained dropped-ceiling tiles, approximately 27 ft² of water damaged (brick and drywall) walls and ceiling and approximately 1 ft² of moldy brick located in the Locker Room.

3.4 - Housekeeping
During the industrial hygiene evaluation of the Orangeburg Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Orangeburg Readiness Center facility in good order.

3.5 – Employee Interviews
During the industrial hygiene evaluation of the Orangeburg Readiness Center, Bonus Environmental, LLC did not perform any interviews, as there were no employees onsite on the day of the industrial hygiene evaluation (due to Hurricane Sandy mobilizations). Therefore, no indoor air quality concerns were identified. No ergonomics issues were noted by Bonus Environmental, LLC.

3.6 – Indoor Air Quality
During the industrial hygiene evaluation of the Orangeburg Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 396 ppm to 536 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 3.8 ppm to 5.1 ppm. CO levels were well below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Orangeburg Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 65.4ºF to 72.3ºF and are considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Orangeburg Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 40.4% to 52.5%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Orangeburg Readiness Center Indoor Air Quality Measurements				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, Southwest side of Building (overcast)	411	3.9	39.4	**59.7**
Company Commander's Office	431	4.0	45.3	69.3
Orderly Room	436	3.9	46.9	69.0
Office	454	3.8	48.7	68.2
N.C.O. Den	536	5.0	45.5	71.8
Kitchen	472	4.8	42.3	71.6
Drill Hall	430	4.5	43.1	69.3
Maintenance Bay 3	396	5.1	40.4	**65.4**
Boiler Room	471	4.8	42.9	72.3
Women's Locker Room	425	4.9	45.7	69.5
Former Indoor Firing Range (Storage)	452	4.2	52.5	70.7

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 - VENTILATION SYSTEM EVALUATION

4.1.1 - Vehicle Exhaust System

An exhaust hood ventilation system was identified in the Orangeburg Readiness Center during the industrial hygiene evaluation. The ventilation system consisted of a central exhaust fan and series of flexible ductwork. The exhaust fan was mounted at the ceiling and exhausted directly to the outdoors through the roof of the building. The exhaust ventilation system was installed for the purpose of removing diesel exhaust fumes. A TSI VelociCalc Air Velocity Meter Model 9555-P was utilized to collect measurements of each exhaust ventilation "snorkel" duct. The table below details the results of the ventilation system evaluation in the Maintenance Shop.

Orangeburg Readiness Center *Ventilation System Evaluation - Vehicle Exhaust System*				
Location	*Measured Average Face Velocity (fpm)*	*Calculated Volumetric Flow (cfm)*	*Area of the Opening (ft^2)*	*Sufficient Air Flow*
North	113	23	0.20	N/A
South	55	11	0.20	N/A

cfm = cubic feet per minute, calculated by multiplying the measured face velocity by the area of the opening, **fpm** = feet per minute.

Figure VS-85-02 on page 13-151 of the ACGIH "A Manual of Recommended Practice for Design, 27th Edition" specifies that tailpipe exhaust ventilation volumes for operating engines connected directly to a tailpipe exhaust system are to be determined by the engine displacement, the engine RPM, and tailpipe exhaust temperature, plus a 20% safety factor. Bonus Environmental, LLC was informed while onsite that there is no vehicle maintenance performed at the Orangeburg Readiness Center.

5.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Orangeburg Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Orangeburg Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Commander's Office	18.8	50	No
Women's Locker Room	30.3	7	Yes
Women's Restroom	82.0	5	Yes
Recruiting Sergeant's Office	31.4	50	No
Orderly Room	37.6	50	No
Office	28.4	50	No
First Sergeant's Office	33.3	50	No
Office	50.8	50	Yes
Unisex Restroom	19.0	5	Yes
Men's Locker Room	26.5	7	Yes
Men's Restroom	161.8	5	Yes
N.C.O. Den	60.5	10	Yes
Classroom	26.6	30	No
Mess Hall	23.7	10	Yes
Kitchen	32.4	50	No
Hallway	15.7	5	Yes
Drill Hall	17.2	30	No
Office	11.6	50	No
Storage 1	20.3	30	No
Storage 2	13.9	30	No
Storage 3	Inaccessible		
Electronic Maintenance	16.2	30	No
Supply	Inaccessible		

Army National Guard – Orangeburg Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Maintenance Bay 1	17.0	75	No
Maintenance Bay 2	28.6	75	No
Maintenance Bay 3	34.1	75	No
Maintenance Bay 4	15.6	75	No
Maintenance Bay 5	18.9	75	No
Women's Locker Room	Lighting Inoperable		
Storage	Inaccessible		
Women's Restroom	11.2	5	Yes
Women's Shower	Lighting Inoperable		
Locker Room	5.8	7	No
Boiler Room	99.2	30	Yes
Storage	14.1	30	No
Locker Room	17.8	7	Yes
Storage Room	10.5	30	No
Former Indoor Firing Range (storage)	29.3	30	No
Hallway	29.1	5	Yes
Former Indoor Firing Range, storage area	23.4	30	No

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

6.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Orangeburg Readiness Center, located at 84 Old Orangeburg Road in Orangeburg, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on October 31, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Orangeburg Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:
    - Drill Hall, on top of the electrical panel #1
    - Kitchen, on top of heater

- Former Indoor Firing Range, bullet trap area
- Former Indoor Firing Range, on top of light fixture
- Former Indoor Firing Range, on exhaust fan grill
- Maintenance Bay 2, on top of flammables cabinet

2. Bonus Environmental, LLC identified several areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified approximately 27 ft^2 of water damaged drywall.

5. Bonus Environmental, LLC identified approximately 10 ft^2 of stained drop ceiling tile from three locations in the Orangeburg Readiness Center.

6. Bonus Environmental, LLC identified approximately 1 ft^2 of moldy brick in the Locker Room.

7. Bonus Environmental, LLC found the housekeeping practices within Orangeburg Readiness Center in good order.

8. No ergonomic concerns were identified.

9. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Orangeburg Readiness Center. All were found to be below or within their acceptable ranges/limits.

10. Areas within the Orangeburg Readiness Center facility were identified as improperly illuminated.

11. No Health and Safety policies were available for review.

12. Exhaust ventilation was measured in the maintenance bays, although vehicle maintenance does not occur within the Orangeburg Readiness Center.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The

information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

Non-Responsive

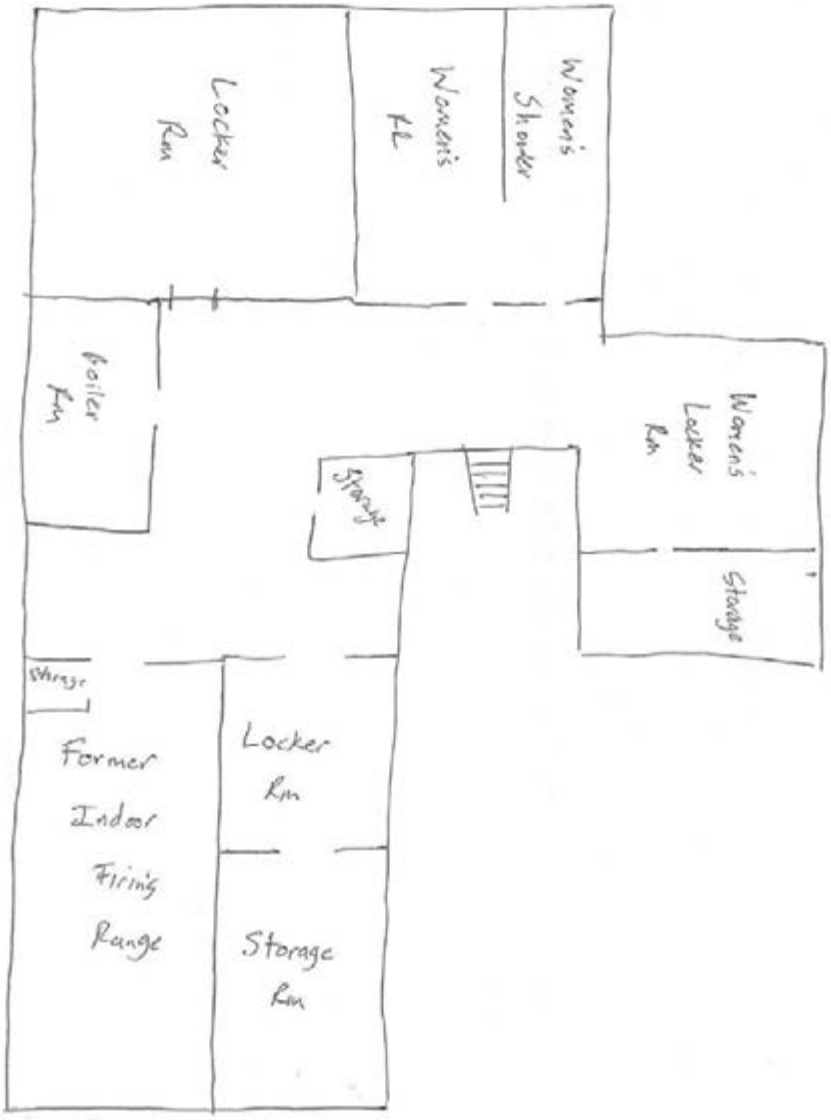
Principal
Bonus Environmental, LLC

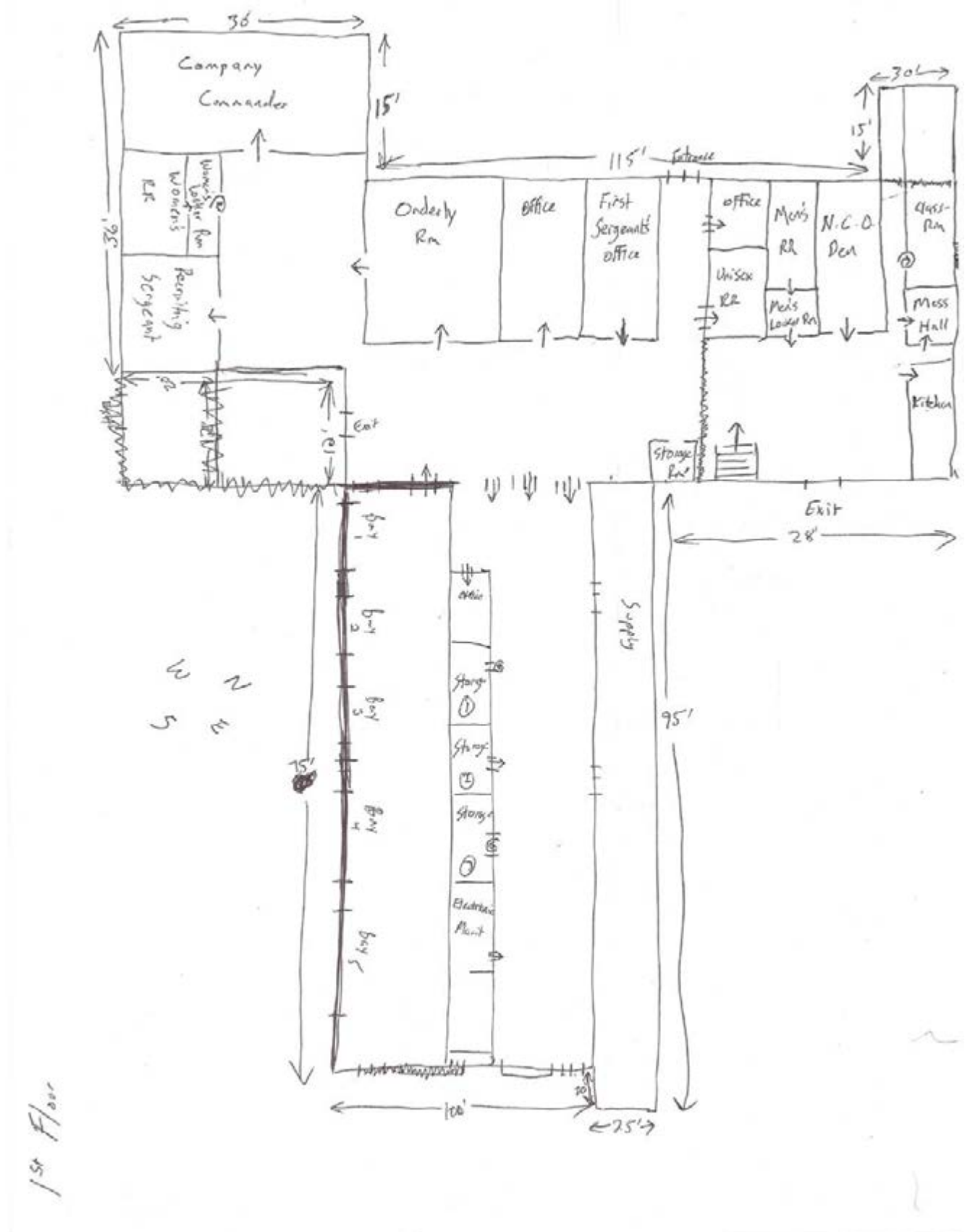
Orangeburg RC_12_Report.docx

Appendix A

Shop Diagram and Air Flow Patterns

Basement




36'
Company Commander
15'
115'
Entrance
30'
15'
36'
Orderly Rm
Office
First Sergeants Office
Office
Men's RR
N.C.O Den
Class-Rm
Unisex RR
Mens Locker Rm
Mess Hall
Kitchen
Storage Rm
Exit
28'
Exit
Bay 1
Bay 2
Bay 3
Bay 4
Bay 5
Office
Storage
Storage
Storage
Electrical Room
Supply
95'
75'
100'
20'
25'
W
E
S
1st Floor

Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Orangeburg RC	Chain Of Custody:	514423
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	84 Old Orangeburg Road, Orangeburg, NY 10962-1128	Date Submitted:	11/6/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/13/2012 Report Date: 11/13/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13011845	OrangeburgRC-PC-1	Flame	Paint Chip	****	N/A	0.011	%Pb		0.035	%Pb	
13011846	OrangeburgRC-PC-2	Flame	Paint Chip	****	N/A	0.0066	%Pb		0.36	%Pb	
13011847	OrangeburgRC-PC-3	Flame	Paint Chip	****	N/A	0.0074	%Pb		0.1	%Pb	
13011848	OrangeburgRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13011849	OrangeburgRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	21	190	ug/ft²	
13011850	OrangeburgRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	17	150	ug/ft²	
13011851	OrangeburgRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011852	OrangeburgRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	1300	12000	ug/ft²	
13011853	OrangeburgRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011854	OrangeburgRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	37	330	ug/ft²	
13011855	OrangeburgRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	2000	18000	ug/ft²	
13011856	OrangeburgRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	2400	21000	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Orangeburg RC	Chain Of Custody:	514423
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	84 Old Orangeburg Road, Orangeburg, NY 10962-1128	Date Submitted:	11/6/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/13/2012 Report Date: 11/13/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments
13011857	OrangeburgRC-LW-10	Flame	Wipe	****	0.111	110 ug/ft²	890	8000 ug/ft²	
13011858	OrangeburgRC-LW-11	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13011859	OrangeburgRC-LW-12	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13011860	OrangeburgRC-LW-13	Flame	Wipe	****	0.111	110 ug/ft²	110	1000 ug/ft²	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Ana Non-Responsive

Technical Manager Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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Focused on Results www.amalab.com
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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514423

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Orangeburg RC
2. Job Location: 84 Old Orangeburg Rd, Orangeburg, NY 10962-1128
3. Job #: 1061-15 PO #: W912K6-09-A-0003
4. Contact Perso[redacted] @ phone #
5. Submitted by:[redacted] ature:[redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due: ____ ☐ 24 Hours Time Due: ____ Comments: ____	☐ Immediate ☐ Next Day ☐ 2 Day ☐ 3 Day ☒ 5 Day + Date Due: 11/13/12 ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report ☒ E[redacted] bonusenvironmental.com ☒ F[redacted] us.army.mil ☒ V[redacted] us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate ____ (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.6 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area) Dust D6480-99 ____ (QTY)
TEM Water
☐ Qual. (pres/abs) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)

☒ All samples received in good condition unless otherwise noted.
TEM Water samples ____ °C)

Metals Analysis
☒ Pb Paint Chip 3 (QTY)
☒ *Pb Dust Wipe (wipe type: Ghost) 13 (QTY)
☐ *Pb Air ____ (QTY)
☐ Pb Soil/Solid ____ (QTY)
☐ Pb TCLP ____ (QTY)
☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Pb Furnace (Media ____) ____ (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ____
Collection Media ____
☐ *Spore-Trap ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
☐ *Surface Swab ____ (QTY) ☐ Culturable ID Genus (Media ____) ____ (QTY)
☐ *Surface Tape ____ (QTY) ☐ Culturable ID Species (Media ____) ____ (QTY)
☐ Other (Specify ____) ____ (QTY)

CLIENT ID #	SAMPLE LOCATION/ID	DATE/TIME	VOL (L)/Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
Orangeburg RC-PC-1	Basement Hallway	10/31					*			*						Date/Time: Contact: By:
Orangeburg RC-PC-2	Basement Hallway						*			*						
Orangeburg RC-PC-3	Former Indoor Firing Range						*			*						
	* SEE ATTACHED FIELD DATA SHEETS	*					*				*					
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 11/6/12 @ 1000 Via: FedEx By[redacted]
2. Date/Time Analyzed: ___/___/___ @ ____ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ___/___/___ Time: ____ Initials: ____
4. Comments: 7938 2838 5546

Surface Sampling Field Data Sheet

Date Collected: 10-31-13
Job Number: 1061-15
Contact Perso: Non-Responsive

Job Name: Orangeburg RC
Job Location:
Address: 84 old Orangeburg Rd, Orangeburg, NY 10962-1129

Company: Bonvs Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Orangeburg RC-LW-1	Field Blank	—	—	Ghost wipe
Orangeburg RC-LW-2	Drill Hall	On Center of Floor	4" x 4"	
Orangeburg RC-LW-3	Drill Hall	On Window sill		
Orangeburg RC-LW-4	Drill Hall	On Filing Cabinet		
Orangeburg RC-LW-5	Drill Hall	On top of Electrical Panel #1		
Orangeburg RC-LW-6	Drill Hall	On top of work table		
Orangeburg RC-LW-7	Kitchen	On top of Heater		
~~Orangeburg~~ Orangeburg RC-LW-8	Former Indoor Firing Range (basement)	Bullet trap Area		
Orangeburg RC-LW-9	Former Indoor Firing Range	On top of light fixture		
Orangeburg RC-LW-10	Former Indoor Firing Range	On Exhaust Fan ~~Duct~~ Grill		
Orangeburg RC-LW-11	Women's Locker Rm	On top of Locker # 68		
Orangeburg RC-LW-12	Company Commander's office	On Air Conditioning Unit		
Orangeburg RC-LW-13	~~Classroom~~ Maintenance Bay 2	On top of Flammables Cabinet		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Photographs

Building exterior, west side

Building exterior, SW side

Office next to 1st Sgt office, stained dropped-ceiling tile

Hallway, looking NW

Drill Hall

Maintenance Bays 1-5 (storage)

Maintenance Bay 2, flammables cabinets


Maintenance Bay 4, vehicle exhaust ventilation


Hallway, water-damaged wall and ceiling


Kitchen


Basement locker room, suspected mold growth on wall


Boiler room

Former indoor firing range (storage)

Basement hallway, peeling beige paint

Former indoor firing range, peeling green paint

Basement hallway, peeling white paint

Appendix D

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct 2011.

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

8 MAY 2006

MEMORANDUM FOR Region North Industrial Hygiene Office (NGB-AVS-SI-IH/ Ms. Non-Responsive), Army National Guard Bureau, 301-IH Old Bay Lane, Havre de Grace, MD 21078

SUBJECT: New York Army National Guard Facilities Industrial Hygiene Survey, Rochester Armory, Rochester, New York, Report No. 55-ML-048L-05/06

1. We are enclosing a copy of the subject report with an Executive Summary.

2. Our point of contact is Mr. Non-Responsive, at commercial (410) 436-5475/3118, DSN 584-5475/3118 or electronic mail: Non-Responsive@us.army.mil

FOR THE COMMANDER:

Non-Responsive

Director, Occupational Health Sciences

Encl

Readiness thru Health

U.S. Army Center for Health Promotion and Preventive Medicine

USCHPPM

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/06
NEW YORK NATIONAL GUARD FACILITIES
ROCHESTER ARMORY
ROCHESTER, NEW YORK
4 OCTOBER 2005

[redacted]

[redacted]

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

Readiness Thru Health

U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/06
NEW YORK NATIONAL GUARD FACILITIES
ROCHESTER ARMORY
ROCHESTER, NEW YORK
4 OCTOBER 2005

1. PURPOSE. To conduct surveys at the New York Army National Guard (NYARNG) facility, Rochester Armory to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

2. CONCLUSIONS.

a. Lead Exposure. Levels of lead in dust that exceeded safe limits for adults and children were identified. These levels may result in health hazards to adults and to children visiting the Armory. Personnel working in the Armory may have been tracking dust-containing lead throughout the facility. Cleaning areas with elevated levels of lead in dust may further prevent lead from becoming redistributed throughout the Armory.

b. Asbestos. The date of construction (1991) indicated that the use of asbestos-containing building materials was unlikely. No potential asbestos-containing materials were identified.

c. Safety and Occupational Health Programs. The Rochester Armory did not have an updated written Hazard Communication Program (HAZCOM).

d. Heating, Ventilation, and Air Conditioning (HVAC) Systems. There was no maintenance program in place for the HVAC system.

e. Lighting. In the professional judgment of the project lead, the lighting levels were adequate.

f. Other Building Concerns. Fire extinguishers were not maintained properly.

Readiness thru Health

3. RECOMMENDATIONS.

a. Lead Exposure. Health Risk Assessment Code (RAC) 3 for child exposures. Health RAC 4 for adult exposures. Address all potential lead hazards before continuing to extend the use of this facility to children. Clean horizontal surfaces in the Indoor Firing Range (IFR) to the National Guard Bureau (NGB) Region North and US Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level. If children will visit this facility, clean the floors in the Drill Hall and IFR bullet trap area to the Environmental Protection Agency and New York State lead in dust standards for young children, and clean other horizontal surfaces in the vault to the NGB Region North and USACHPPM recommended maximum level. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when working in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. No recommendation required.

c. HAZCOM Program. Health RAC 3. Develop and implement a written program that is specific to the Rochester Armory.

d. HVAC System. Health RAC 4. Develop and implement an HVAC maintenance program. Include provisions for regularly scheduled filter replacement and documentation of maintenance performed.

e. Lighting. Quantify light levels in follow-on assessments.

f. Indoor Air Quality. Health RAC 5. No recommendation required.

g. Other Building Concerns. Safety RAC 3. Inspect building fire extinguishers monthly. Mark tags kept on the extinguishers with the initials of the person conducting the inspection. Wall mount fire extinguishers in appropriate locations and ensure that they are not obstructed.

NYARNG, Industrial Hygiene Survey, Rochester Armory, Rochester, NY, Report No. 55-ML-048L-05/06, 4 October 2005

CONTENTS

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/06
NEW YORK NATIONAL GUARD FACILITIES
ROCHESTER ARMORY
ROCHESTER, NEW YORK
4 OCTOBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE. To conduct surveys at the New York Army National Guard (NYARNG) facilities, Rochester Armory, to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Electronic mail, National Guard Bureau Region North, Industrial Hygiene Office (NGB-AVS-SI-IH/Ms. Non-Responsive), 27 July 2005, subject: SAB.

4. BACKGROUND.

a. Date of Construction. The construction date was 1991.

b. Size of Facility. The facility had a floor area of approximately 86,000 square foot. It was a two-story building.

c. Mission. Support activities for the 105th Military Police Company.

d. Armory Use by Children. The point of contact (POC) stated that children occupied the facility occasionally during special events.

e. Point of Contact. The POC was Mr Non-Responsive, Facilities Management Supervisor, 250 Weidner Road, Rochester, NY 14020-1275, Phone: (585) 783-5300.

5. FACILITY EVALUATION.

a. Sampling. Surface lead in dust and air sampling was conducted to determine the existence of lead hazards based on regulatory guidelines. Results are shown in Appendix B.

b. Physical Condition of Facilities.

(1) Paint. The date of construction of the facility indicated that the use of lead in paint was unlikely.

(2) Asbestos. The POC reported that the building had no history of asbestos-containing material or suspected asbestos containing material. The date of construction made its presence unlikely.

(3) Mold and Moisture Problems. No mold or moisture problems were observed or reported.

(4) Building Physical Condition. The building was in good condition and had been well maintained.

(5) Indoor Firing Range (IFR). The POC reported that lead abatement in the IFR had been completed and that the area was being used for storage.

c. Safety and Occupational Health Programs. The POC stated that a Hazard Communication (HAZCOM) Program was in place. A written program was not available.

d. Heating, Ventilation, and Air Conditioning (HVAC) Systems. The building utilized a gas heating system and central air system for cooling. The POC stated that the building's HVAC system was being updated as part of building renovations being conducted at the time of the site visit. There was no HVAC maintenance plan other than putting tags on filters that needed replacing.

e. Noise Dosimetry. No operations with the potential to generate hazardous noise levels were identified.

f. Lighting. The scope of work for this survey called for measurement of lighting levels in areas where there may have been a potential problem, based on professional judgment. The National Guard Bureau (NGB) verbally requested that light levels be measured throughout facilities. Due to miscommunication, the project lead visiting this site did not quantify light levels, but did use professional judgment in assessing the lighting levels.

g. Indoor Air Quality (IAQ). The IAQ assessment included measuring temperature in degrees Fahrenheit (º F), relative humidity (RH) in percent, and carbon dioxide (CO_2) levels in parts per million (ppm) in different locations throughout the facility. Measurements were taken in the Classroom, Drill Hall, Dining Hall, and IFR. The American Society of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE) recommends maintaining 71-81º F in the summer, CO_2 levels below the value of 700 ppm plus the outdoor ambient level (approximately 380 ppm), and 30-60 percent RH.

h. Other Building Concerns. Fire extinguishers. One extinguisher had electrical wire wrapped around it, and two others were kept in the corner on the floor. One had no inspection tags. See photographs in Appendix D.

6. ASSESSMENT CRITERIA FOR LEAD. See Appendix C.

a. Lead in Air. The Army complies with the Occupational Safety and Health Administration (OSHA) 8-hour time-weighted average Permissible Exposure Limit of 50 micrograms of lead per cubic meter (µg/m³) of air.

b. Lead in Dust. The Environmental Protection Agency (EPA) and State of New York limits for lead in dust are 40 micrograms per square foot (µg/ft^2) on floors, 250 µg/ft^2 on windowsills, and 400 µg/ft^2 in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North concurs with the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended maximum level of 200 µg/ft^2 on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA/State standards. This limit was adopted from OSHA guidance in Compliance Letter 02-02-58.

c. Lead in Paint. Paint containing lead levels of 0.5 percent or more by weight in dried solid (also reported as 5,000 milligrams per kilogram) is considered lead-based paint according to both Federal and New York State Regulations.

d. Lead Carcinogenicity. The Department of Health and Human Services National Toxicology Program (NTP) released the Report on Carcinogens, Eleventh Edition in February 2005. The NTP report lists “lead and lead compounds” as “reasonably anticipated being human carcinogens”.

7. SAMPLING RESULTS, DISCUSSION, AND CONCLUSIONS.

a. Lead in Dust. Lead in dust sample locations and analytical results are shown in Appendix B. Sample results greater than 40 µg/ft² on floors or 200 µg/ft² on frequently contacted surfaces are highlighted.

b. Lead in Air. General area lead in air sampling was conducted in the Drill Hall, Dining Hall, Classroom, and IFR. The air sample results were less than 17 µg/m³, and were below the laboratory analytical reporting limit for lead in air of 16 µg/sample, as well as the OSHA standard of 50 µg/m³ for lead in air over an 8-hour day.

c. IAQ. The temperature averaged 74º F, RH averaged 59 percent, and CO_2 levels averaged 438 ppm. All values were within ASHRAE recommendations.

d. Asbestos. The date of construction (1991) indicated that the use of asbestos-containing building materials was unlikely. No potential asbestos-containing building materials were identified.

e. Safety and Occupational Health Programs. The Rochester Armory did not have an updated written HAZCOM Program.

f. HVAC Systems. There was no maintenance program in place for the HVAC system.

g. Lighting. In the professional judgment of the project lead, the lighting levels were adequate.

h. Other Building Concerns. Fire extinguishers were not maintained properly.

8. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Lead Exposure. Health RAC 3 for child exposures. Health RAC 4 for adult exposures. Address all potential lead hazards before continuing to extend the use of this facility to children. Clean horizontal surfaces in the IFR to the NGB Region North and USACHPPM recommended maximum level. If children will visit this facility, clean the floors in the Drill Hall and IFR bullet trap area to the EPA and New York State lead in dust standards for young children, and clean other horizontal surfaces in the vault to the NGB Region North and USACHPPM recommended maximum level. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when working in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. IAQ. Health RAC 5. No recommendation required.

c. Asbestos Exposure. No recommendation required.

d. Hazard Communication. Health RAC 3. Develop and implement a written program that is specific to the Rochester Armory.

e. HVAC Systems. Health RAC 4. Develop and implement an HVAC maintenance program. The plan should include provisions for regularly scheduled filter replacement and documentation of maintenance performed.

f. Lighting. Quantify light levels in follow-on assessments.

g. Other Building Concerns. Safety RAC 3. Inspect building fire extinguishers monthly. Mark tags kept on the extinguishers with the initials of the person conducting the inspection. Wall mount fire extinguishers in appropriate locations and ensure that they are not obstructed.

9. PHOTOGRAPHS. See Appendix D.

10. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report; please contact the undersigned at commercial 410-436-3118, DSN 584-3118, or by electronic mail: Non-Responsive@us.army.mil

Non-Responsive
Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive
Program Manager
Industrial Hygiene Field Services Program

BEST AVAILABLE COPY

APPENDIX A

REFERENCES

Literature Cited

1. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910, current ed.
http://www.osha.gov/comp-links.html

2. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality.
http://www.ashrae.org

3. Illuminating Engineering Society of North America, ANSI/IESNA, RP-I 1993, Office Lighting.

4. American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values for Chemical Substances and Physical Agents, 2005.

5. Department of Health and Human Services National Toxicology Program (NTP) Substance Profiles, Report on Carcinogens, 11th Edition, Lead and Lead Compounds (CAS No. 7439-92-1) February 2005.

6. EPA 40 CFR Part 745, Lead; Identification of Dangerous Levels of Lead; Final Rule, 5 Jan 2001.

7. American Conference of Governmental Industrial Hygienists (ACGIH), Industrial Ventilation, 25th edition, 2004.

8. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, 19 August 1998.
http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

9. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000.
http://www.usapa.army.mil/pdffiles/p4C_503.pdf

10. Environmental Protection Agency, Title 40 CFR, Part 61, National Emission Standards for Hazardous Air Pollutants, Subpart M-National Emission Standard for Asbestos.

NYARNG Industrial Hygiene Survey, Rochester Armory, Rochester, NY Report No. 55-ML-048L-05/06, 4 October 2005

11. OSHA Directive CPL 02-02-58, Lead Exposure in Construction; Interim Final Rule – Inspection and Compliance Procedures, December 13, 1993.

APPENDIX B

SAMPLING RESULTS

NYARNG Industrial Hygiene Survey, Rochester Armory, Rochester, NY Report No. 55-ML-048L-05/06, 4 October 2005

APPENDIX B

Lead in Surface Dust Locations and Analytical Results

Wipe Sample Number	Location	Results (ug/ft^2)
ROW-01	Drill Hall – NW Corner	36
ROW-02	Drill Hall – NE Corner	18
ROW-03	Drill Hall – SE Corner	110
ROW-04	Drill Hall – SW Corner	11
ROW-06	Drill Hall - Center	77
ROW-07	IFR – Bullet Trap Floor	180
ROW-08	IFR – Storage Area	8.3
ROW-09	IFR – HVAC, Not Currently Operational	450
ROW-11	Kitchen Stove Top Shelf	<2.7
ROW-12	Dining Hall – Table Top	<2.7
ROW-13	Class Room, Room 192	<2.7
ROW-14	Stairway, Front Lobby	11
ROW-16	Office Bookshelf, Room 205	11
ROW-17	Office Conference Table, Room 205	140
ROW-18	Office Supply Grille, Room 223	77
ROW-19	Office Desk, FTEE, Room 223	3.5
ROW-21	Classroom, Room 222	<2.7
ROW-22	Vault, Co G, Table Top Next to Door	4.6
ROW-23	Vault #16	18
ROW-24	Office Room 287	7.4

Lead in Air Locations and Analytical Results.

Air Sample Number	Location of Samples	Result ($\mu g/m^3$)
RO-A01	Indoor Firing Range (IFR)	<17
RO-A02	Classroom	<17
RO-A03	Dining Hall	<17
RO-A04	Drill Hall	<17

APPENDIX C

ASSESSMENT CRITERIA FOR LEAD

SUBJECT: National Guard Bureau Region North Industrial Hygiene Office Proposed Recommendations for Surface Lead in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building,

NYARNG Industrial Hygiene Survey, Rochester Armory, Rochester, NY Report No. 55-ML-048L-05/06, 4 October 2005

APPENDIX D

PHOTOGRAPHS

Drill Hall – NW corner

Drill Hall – NE corner

Drill Hall – SE corner

Drill Hall – SW corner

NYARNG Industrial Hygiene Survey, Rochester Armory, Rochester, NY Report No. 55-ML-048L-05/06, 4 October 2005

Drill Hall – center

IFR – Bullet trap area floor

IFR – storage area

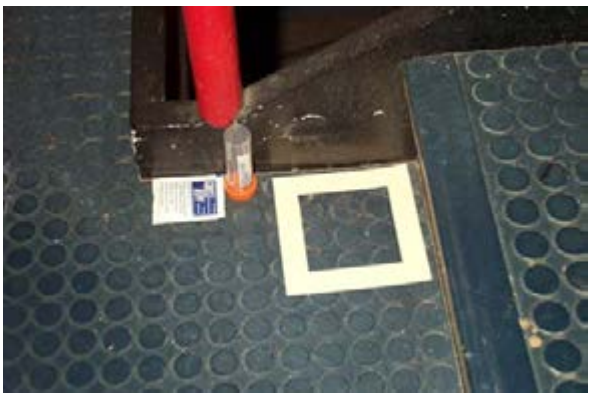
IFR – ductwork

NYARNG Industrial Hygiene Survey, Rochester Armory, Rochester, NY Report No. 55-ML-048L-05/06, 4 October 2005

Kitchen – above stove shelf

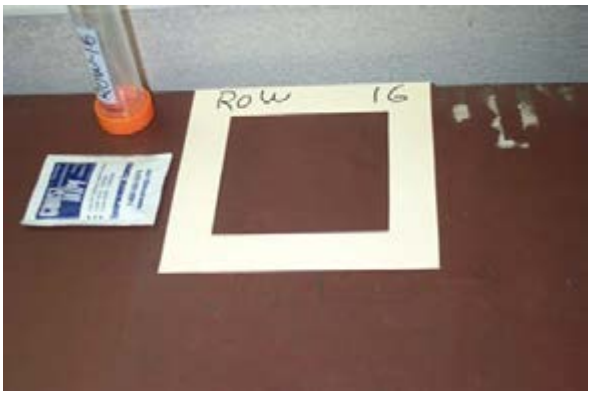
Dining Hall

Classroom

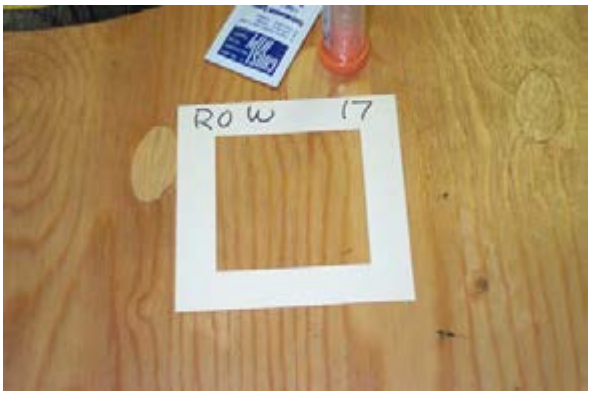


Front lobby stairway

NYARNG Industrial Hygiene Survey, Rochester Armory, Rochester, NY Report No. 55-ML-048L-05/06, 4 October 2005



Office common area bookshelf, Room 205



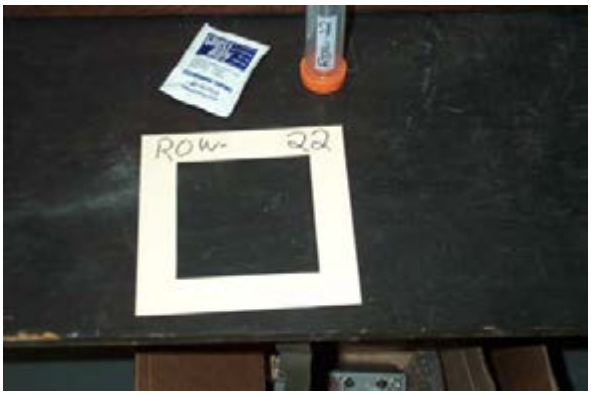
Office common area, Room 205

Office area air supply grille, Room 223

Office desk, Room 223

NYARNG Industrial Hygiene Survey, Rochester Armory, Rochester, NY Report No. 55-ML-048L-05/06, 4 October 2005

Classroom 222



Vault Co. 6

Vault #16

Fire extinguisher wrapped with wires

Fire extinguishers on floor

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Rochester Readiness Center
Rochester, NY 14624

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
February 12, 2013

Bonus Environmental, LLC

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APPENDICES

February 2, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Rochester Readiness Center, Rochester, NY 14624

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Rochester Readiness Center located at 42 Patriot Way in Rochester, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 28, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Rochester Readiness Center is an Army National Guard armory comprised of offices, classrooms, locker rooms, storage rooms, an auditorium, a drill hall, kitchens, conference rooms, a Mess hall, a boiler room, a break room, telecom/mechanical rooms, a fitness room, a garage, and a former indoor firing range (used for storage). The point of contact for the approximately 76,421 ft² Rochester Readiness Center is Mr. Michael Donovan. No Health and Safety programs were available to review during the survey. Thirty (30) full-time administrative personnel are employed at the Rochester Readiness Center. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twenty four (24) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Rochester Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
Rochester RC-LW-1	11-28-12	Field Blank	---	< 12 μg
Rochester RC-LW-2	11-28-12	Drill Hall, on floor, South end	0.111	< 110
Rochester RC-LW-3	11-28-12	Drill Hall, on floor, North end	0.111	< 110
Rochester RC-LW-4	11-28-12	Drill Hall, on top of Amnesty box	0.111	< 110
Rochester RC-LW-5	11-28-12	Drill Hall, on top of the Fire Alarm System box	0.111	< 110
Rochester RC-LW-6	11-28-12	Drill Hall, on basketball hoop, West side	0.111	< 110
Rochester RC-LW-7	11-28-12	Kitchen, on paper towel dispenser	0.111	< 110
Rochester RC-LW-8	11-28-12	Storage (Former Indoor Firing Range), on floor, North end	0.111	1,300
Rochester RC-LW-9	11-28-12	Storage (Former Indoor Firing Range), on floor, South end	0.111	520
Rochester RC-LW-10	11-28-12	Storage (Former Indoor Firing Range), on top of emergency lighting	0.111	< 110
Rochester RC-LW-11	11-28-12	Mess Hall, on window sill	0.111	< 110
Rochester RC-	11-28-12	Break Room, on top of microwave	0.111	< 110

Army National Guard – Rochester Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-12				
Rochester RC-LW-13	11-28-12	Women's Locker Room, on top of locker # H-16	0.111	< 110
Rochester RC-LW-14	11-28-12	2nd Floor Kitchen, on heater grill	0.111	< 110
Rochester RC-LW-15	11-28-12	Office 4-205, on window sill	0.111	< 110
Rochester RC-LW-16	11-28-12	Classroom 4-213, on top of TV	0.111	< 110
Rochester RC-LW-17	11-28-12	2nd Floor Hallway, on top of AED box	0.111	< 110
Rochester RC-LW-18	11-28-12	Office 267, on top of shelf	0.111	< 110
Rochester RC-LW-19	11-28-12	Classroom 263, on top of podium	0.111	< 110
Rochester RC-LW-20	11-28-12	Club 275, on top of ice machine	0.111	< 110
Rochester RC-LW-21	11-28-12	Lobby 241-C, on top of filing cabinet	0.111	< 110
Rochester RC-LW-22	11-28-12	Office 231, on window sill	0.111	260
Rochester RC-LW-23	11-28-12	Office 213, on top of paper shredder	0.111	< 110
Rochester RC-LW-24	11-28-12	Classroom 282, on top of TV	0.111	< 110
Rochester RC-LW-25	11-28-12	Conference Room 280, on window sill	0.111	< 110

Surface cleanliness threshold = < 200 micrograms per square foot ($\mu g/ft^2$)

The former indoor firing range is currently used as a storage room. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area. It was reported to Bonus Environmental, LLC that the former indoor firing range is referred to as the "range" but was never used as one.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Rochester Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC did not identify any areas of peeling paint.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Rochester Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Rochester Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged or visible mold problems. Bonus Environmental, LLC identified water-damaged and/or moldy building materials in the following locations:

- Approximately 2 ft^2 of stained/moldy dropped-ceiling tile (DCT) in the Mess hall;
- Approximately 1 ft^2 of stained DCT in Recruiter's office 126;
- Approximately 3 ft^2 of stained DCT in classroom 127;
- Approximately 1 ft^2 of stained DCT in office 4-205;
- Approximately 1 ft^2 of stained DCT in 2nd floor storage room;
- Approximately 4 ft^2 of stained DCT in 2nd floor, women's restroom;
- Approximately 1 ft^2 of stained DCT in classroom 282.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Rochester Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Rochester Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Rochester Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Rochester Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 394 ppm to 564 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 2.6 ppm to 8.9 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Rochester Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 60.1 ºF to 67.7ºF and are considered to be outside of an unacceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Rochester Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 20.4% to 31.2%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Rochester Readiness Center *Indoor Air Quality Measurements*				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, south side of building (mostly cloudy)	394	8.9	36.4	39.1
Mess Hall (112)	399	2.6	31.2	**60.1**
Break Room (133) (3 people in room)	564	3.4	28.7	**62.8**
Classroom (127)	414	4.1	26.1	**62.4**
Men's Locker Room	409	4.0	24.4	**63.6**
Office (4-205)	432	3.7	25.9	**66.6**
Office (4-212)	408	4.3	21.9	67.3
Conference Room (205)	419	4.0	23.3	67.1
Classroom (282)	421	4.4	21.6	67.3
Office (273)	416	4.7	20.4	67.7
Drill Hall	422	5.0	25.0	**61.3**

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Rochester Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Rochester Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Mess Hall (112)	139.3	10	Yes
Storage Room (114)	12.4	30	No
Paint Room	Inaccessible		
Telecommunications Room (122)	19.8	30	No
Boiler Room (124)	8.2	30	No
Kitchen Storage (125)	50.0	30	Yes
Kitchen	97.8	50	Yes
Dish Wash Area	59.1	30	Yes
Break Room (133)	89.7	10	Yes
Drill Hall	28.9	30	No
Office (106)	26.8	50	No
Women's Restroom (105)	49.7	5	Yes
Men's Restroom (104)	21.2	5	Yes
Office (102)	71.3	50	Yes
Recruiters Office (126)	24.1	50	No
Office (126A)	51.8	50	Yes
Office (126B)	54.8	50	Yes
Office (126C)	69.4	50	Yes
Classroom (127)	106.9	30	Yes

Army National Guard – Rochester Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Storage (132)	18.1	30	No
Supply Room (131)	Inaccessible		
Supply Room (133)	Inaccessible		
Supply Room (134)	Inaccessible		
Supply Room (135)	Inaccessible		
Supply Room (160)	Inaccessible		
Supply Room (152)	Inaccessible		
Supply Room (154)	Inaccessible		
Supply Room (140)	Inaccessible		
Supply Room (144)	Inaccessible		
Supply Room (142)	Inaccessible		
Supply Room (129)	Inaccessible		
Mechanical Room (3-103)	40.8	30	Yes
Men's Locker Room	69.9	7	Yes
Men's Restroom	14.2	5	Yes
Men's Shower	69.6	7	Yes
Men's Locker Room	26.8	7	Yes
Fitness Room (3-118)	Inaccessible		
Janitors Room (3-107)	17.7	30	No
Classroom (3-109)	Inaccessible		
Women's Restroom	28.9	5	Yes
Women's Shower	21.7	7	Yes
Women's Locker Room	45.8	7	Yes
State Maintenance Room (3-117)	34.9	30	Yes
Office (3-116)	46.7	50	No
State Storage	82.9	30	Yes
Vault (3-108)	Inaccessible		
Maintenance Garage (3-112) (storage)	5.8	30	No
Office (3-115)	60.4	50	Yes
Mechanical Room (3-110)	16.3	30	No
Men's Restroom	10.7	5	Yes
Women's Restroom	13.8	5	Yes
Kitchen	47.2	50	No
Office (4-202)	40.3	50	No
Office	36.0	50	No
Office (4-203)	25.7	50	No
Office (4-204)	42.4	50	No
Office (4-205)	41.8	50	No
Office (4-206)	34.0	50	No
Office (4-207)	43.3	50	No
Office (4-208)	36.9	50	No
Office (4-209)	30.3	50	No
Janitor Room (4-210)	24.3	30	No
Auditorium (4-216)	18.2	30	No
Mechanical Room (4-211)	70.8	30	Yes
Office (4-212)	51.9	50	Yes
Office (4-212A)	54.5	50	Yes

Army National Guard – Rochester Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Office (4-212B)	51.8	50	Yes
Conference Room (4-212C)	56.2	30	Yes
Classroom (4-213)	51.9	30	Yes
Club (275)	28.1	10	Yes
Classroom (264)	44.2	30	Yes
Office (265)	11.7	50	No
Office (273)	17.2	50	No
Office	25.1	50	No
Office (269)	37.6	50	No
Office (1)	32.0	50	No
Office (2)	12.5	50	No
Computer Room (272)	28.4	30	No
Office (273)	21.6	50	No
Office (267)	34.5	50	No
Office (268)	3.4	50	No
Storage Room (274)	Inaccessible		
Office (277)	41.3	50	No
Office (253)	17.3	50	No
Office (254)	15.6	50	No
Conference Room (249)	25.5	30	No
Office (250)	23.2	50	No
Office (251)	8.4	50	No
Lobby (241A)	11.8	10	Yes
Office (248)	37.9	30	Yes
Office (247)	40.9	50	No
Lobby (241B)	22.7	10	Yes
Office (246)	19.4	50	No
Office (245)	39.7	50	No
Lobby (241C)	4.8	10	No
Office (244)	19.9	50	No
Storage (243)	33.8	30	Yes
Office (242)	23.5	50	No
Telecommunications Room (234)	22.4	30	No
Men’s Locker Room (238)	12.2	7	Yes
Office (231)	28.5	50	No
Office (223)	81.0	50	Yes
Office (222)	36.9	50	No
Women’s Locker Room	38.5	7	Yes
Conference Room (205)	69.7	30	Yes
Office (221)	13.0	50	No
Office (220)	28.5	50	No
Office (219)	15.1	50	No
Office (218)	24.6	50	No
Office (217)	21.8	50	No
Office (216)	37.9	50	No
Office (214)	36.5	50	No
Office (213)	42.7	50	No

Army National Guard – Rochester Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Office (212)	11.8	50	No
Storage Room	24.7	30	No
Office (215)	34.6	50	No
Office (211)	19.2	50	No
Women's Restroom	49.3	5	Yes
Men's Restroom	34.5	5	Yes
Men's Locker Room	13.6	7	Yes
Office (219)	25.7	50	No
Office (219A)	20.8	50	No
Office (219B)	35.0	50	No
Classroom (282)	74.8	30	Yes
Office (291)	26.9	50	No
Office (292)	24.9	50	No
Office (293)	25.8	50	No
Office (294)	36.4	50	No
Conference Room (280)	22.3	30	No
Storage Room (Former Indoor Firing Range)	8.9	30	No

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Rochester Readiness Center located at 42 Patriot Way in Rochester, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Erica Funnell on November 28, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Rochester Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:

    - Storage (Former Indoor Firing Range), on floor, north end;

- Storage (Former Indoor Firing Range), on floor, south end;
- Office 231, on window sill.

2. Bonus Environmental, LLC did not identify any areas of peeling paint within the Rochester Readiness Center.

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified approximately 13 ft² of stained dropped-ceiling tile across seven locations, with approximately 2 ft² harboring suspected fungal growth in the Rochester Readiness Center.

5. Bonus Environmental, LLC found the housekeeping practices within Rochester Readiness Center in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Rochester Readiness Center. All were found to be within their acceptable ranges/limits; with the exception of several low temperature readings.

8. Areas within the Rochester Readiness Center facility were identified as improperly illuminated.

9. No Health and Safety programs were available for review at the Rochester Readiness Center.

10. The Maintenance Garage is used for storage. No maintenance is performed in the garage, and no vehicle exhaust ventilation system exists in the garage.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

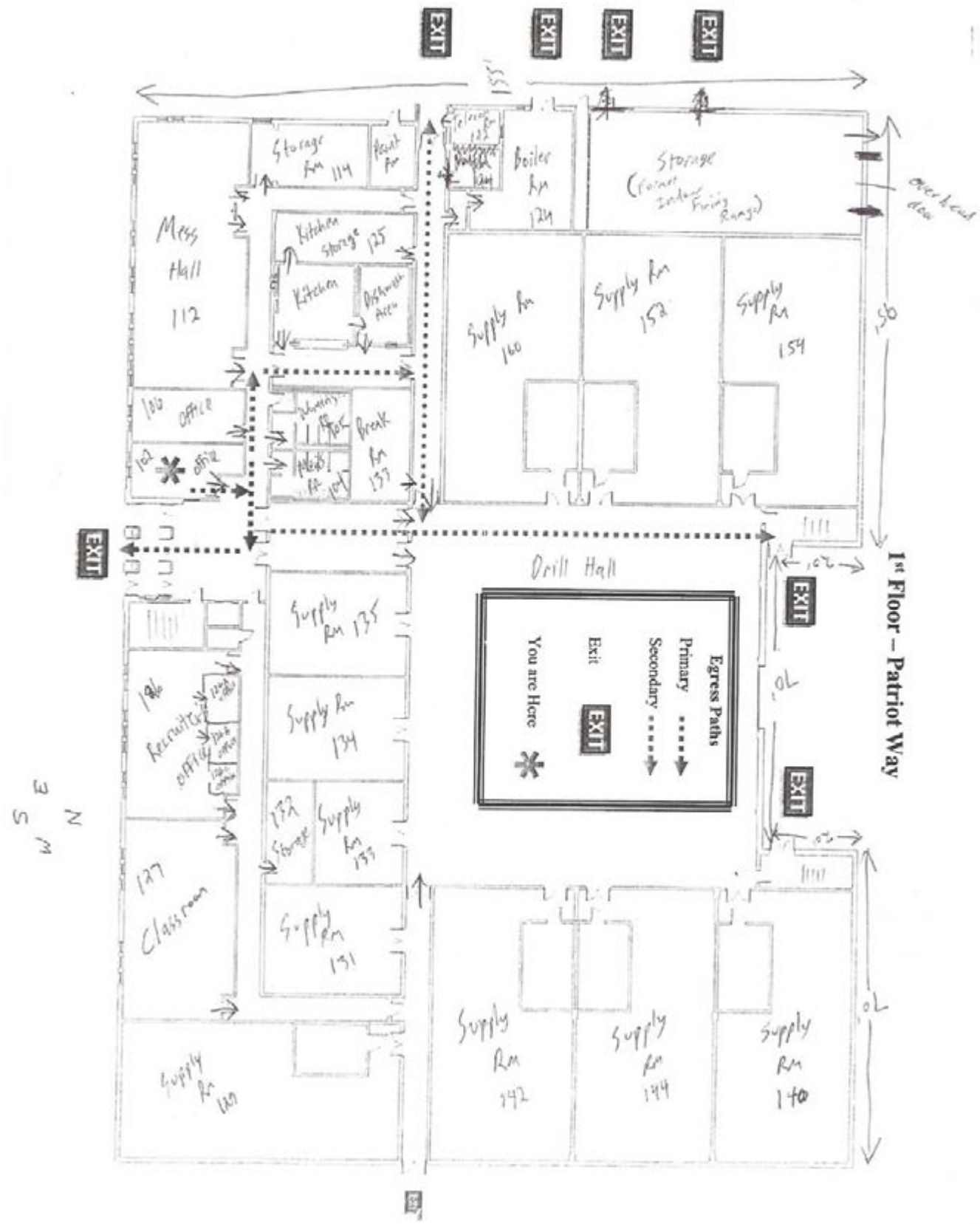
Sincerely,

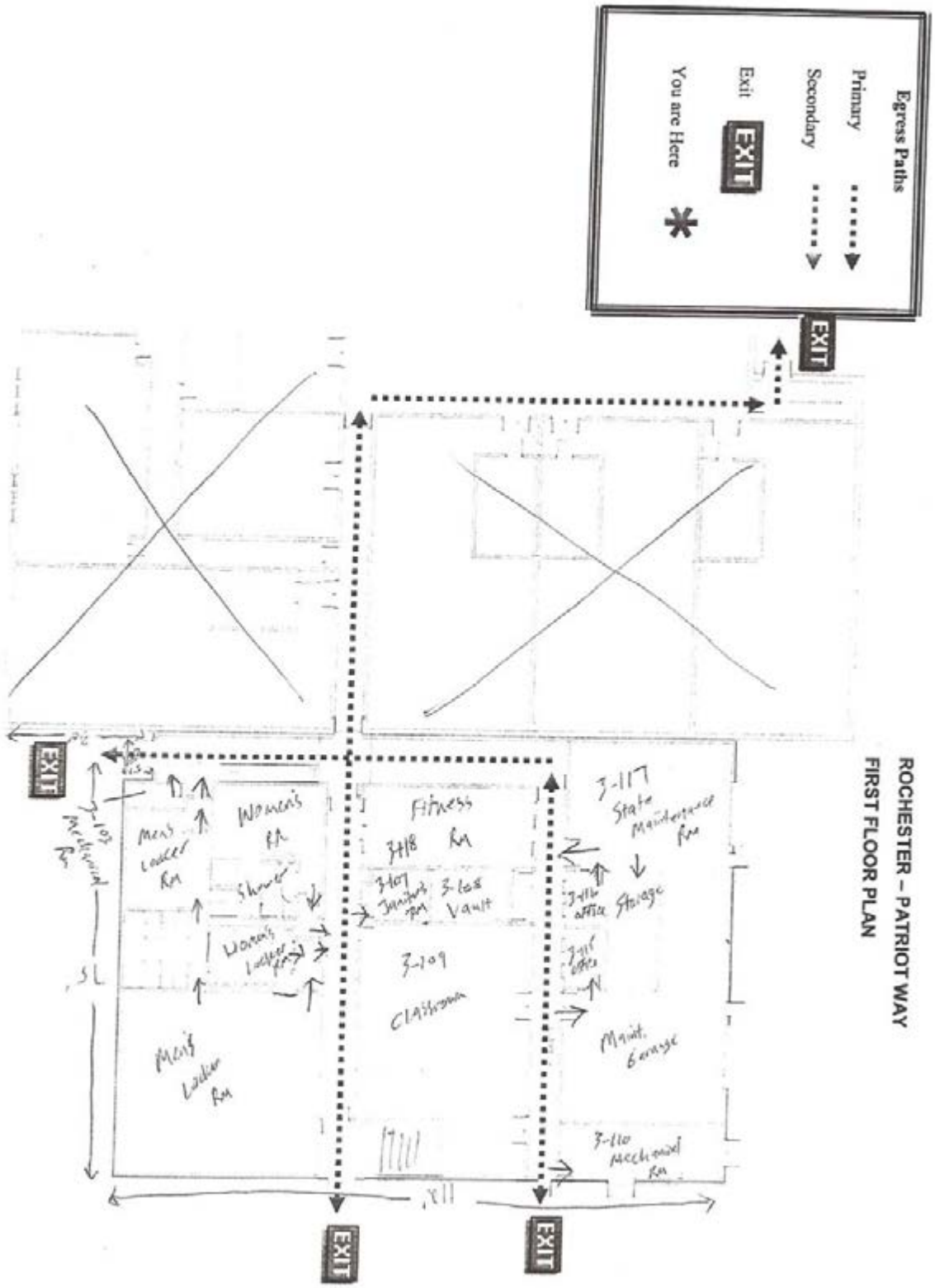
Non-Responsive

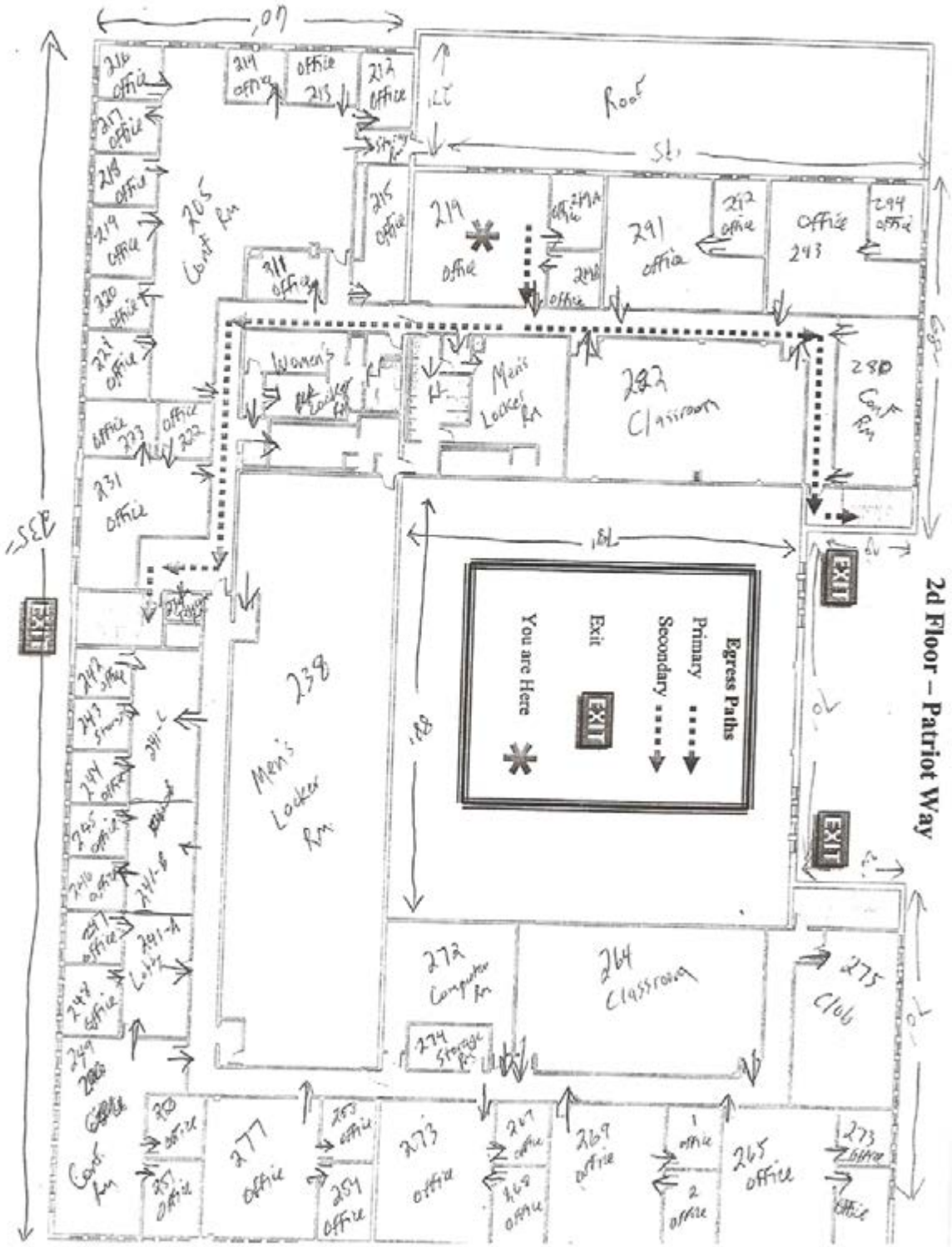
Principal
Bonus Environmental, LLC

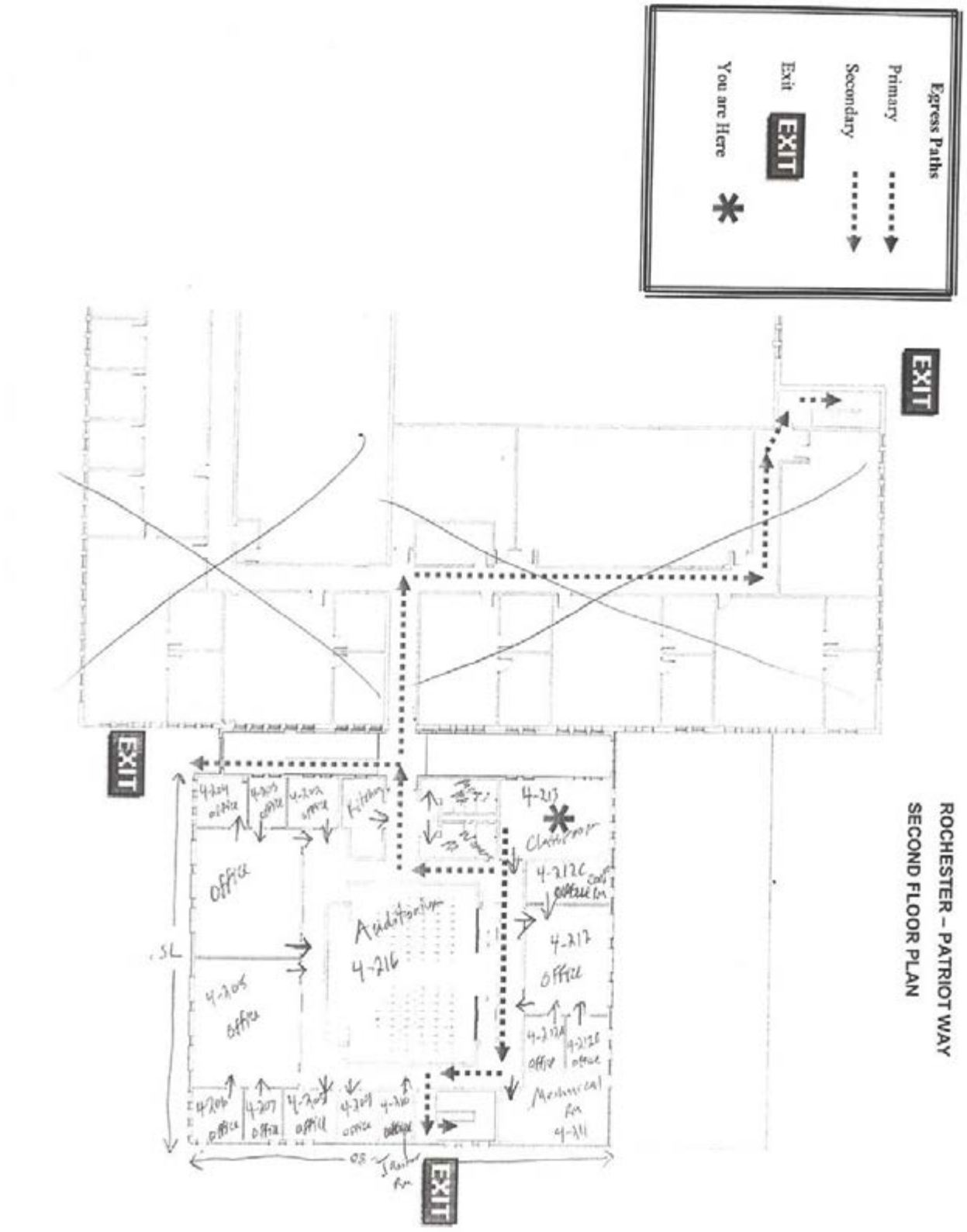
Appendix A

Shop Diagram and Air Flow Patterns






Egress Paths
Primary
Secondary
Exit
You are Here
EXIT
2d Floor – Patriot Way



Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Rochester RC	Chain Of Custody:	514680
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	45 Patriot Way, Rochester, NY 14624	Date Submitted:	12/4/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	12/13/2012 Report Date: 12/17/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13019645	RochesterRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13019646	RochesterRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019647	RochesterRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019648	RochesterRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019649	RochesterRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019650	RochesterRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019651	RochesterRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019652	RochesterRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	140	1300	ug/ft²	
13019653	RochesterRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	58	520	ug/ft²	
13019654	RochesterRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019655	RochesterRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019656	RochesterRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019657	RochesterRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019658	RochesterRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019659	RochesterRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019660	RochesterRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019661	RochesterRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019662	RochesterRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019663	RochesterRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

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AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAP, LLC #100470

Client:	National Guard Bureau	**Job Name:**	Rochester RC	**Chain Of Custody:**	514680
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	45 Patriot Way, Rochester, NY 14624	**Date Submitted:**	12/4/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	12/13/2012 **Report Date:** 12/17/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13019664	RochesterRC-LW-20	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019665	RochesterRC-LW-21	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019666	RochesterRC-LW-22	Flame	Wipe	****	0.111	110	ug/ft²	29	260	ug/ft²	
13019667	RochesterRC-LW-23	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019668	RochesterRC-LW-24	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13019669	RochesterRC-LW-25	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Analyst: Non-Responsive

Technical Manager: Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514680

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Rochester RC
2. Job Location: 42 Patriot Way, Rochester, NY 14624
3. Job #: 104-15 P.O. #: W912K6-09-A-0003
4. Contact Person: [redacted] @ phone #
5. Submitted by: [redacted] Signature: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)
☐ Immediate Date Due: ____
☐ 24 Hours Time Due: ____
Comments: ____

NORMAL BUSINESS HOURS
☐ Immediate ☐ 3 Day
☐ Next Day ☒ 5 Day + ☐ Results Required By Noon
☐ 2 Day Date Due: 12/11/12

REPORT TO:
☒ Include COC/Field Data Sheets with Report [redacted]
☒ Email [redacted] bonusenvironmental.com
☒ Fax: [redacted] us.army.mil
☒ Verbal [redacted] us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate ____ (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.6 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area) Dust D6480-99 ____ (QTY)
TEM Water
☐ Qual. (pres/abs) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples ____ °C)

If field data sheets are submitted, there is no need to complete bottom section.

*It is recommended that blank samples be submitted with all air and surface samples

Metals Analysis
☐ Pb Paint Chip ____ (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 25 (QTY)
☐ *Pb Air ____ (QTY)
☐ Pb Soil/Solid ____ (QTY)
☐ Pb TCLP ____ (QTY)
☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Pb Furnace (Media ____) ____ (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ____
Collection Media ____
☐ *Spore-Trap ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
☐ *Surface Swab ____ (QTY) ☐ Culturable ID Genus (Media ____) ____ (QTY)
☐ *Surface Tape ____ (QTY) ☐ Culturable ID Species (Media ____) ____ (QTY)
☐ Other (Specify ____) ____ (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/TIME	VOL (L)/ Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	✱ SEE ATTACHED FIELD DATA SHEETS ✱						✱				✱					
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 12/4/12 @ 1000 Via: FedEx By [redacted]
2. Date/Time Analyzed: ___/___/___ @ ____ By (Print): [redacted] Sign. ____
3. Results Reported To: ____ Via: ____ Date: ___/___/___ Time: ____ Initials: ____
4. Comments: ____

Surface Sampling Field Data Sheet

Date Collected: 11-28-13
Job Number: 1061-15
Contact Perso: Non-Responsive
Job Name: Rochester RC
Job Location:
Address: 42 Patriot Way
Rochester NY 14624
Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By:
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Rochester RC-LW-1	Field Blank	—	—	Ghost wipe
Rochester RC-LW-2	Drill Hall	On Floor, South end	4"x4"	
Rochester RC-LW-3	Drill Hall	On Floor, North end		
Rochester RC-LW-4	Drill Hall	On top of the Amnesty Box		
Rochester RC-LW-5	Drill Hall	On top of the Fire Alarm System Box		
Rochester RC-LW-6	Drill Hall	On Basketball hoop, West Side		
Rochester RC-LW-7	Kitchen	On paper towel dispenser		
Rochester RC-LW-8	Storage (Former Indoor Firing Range)	On floor, North end		
Rochester RC-LW-9	Storage (Former Indoor Firing Range)	On Floor, South end		
Rochester RC-LW-10	Storage (Former Indoor Firing Range)	On top of Emergency Lighting		
Rochester RC-LW-11	Mess Hall	On window sill		
Rochester RC-LW-12	Break Rm	On top of microwave		
Rochester RC-LW-13	Women's Locker Rm	On top of Locker # 11-16	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-28-12
Job Name: Rochester RC
Company: Bonus Environmental, LLC
Job Number: 1061-15
Job Location:
Phone Number: 989-779-7686
Contact Person: Non-Responsive
Address: 43 Patriot Way
Rochester NY 14624
Collected By:
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Rochester RC-LW-14	2nd Floor, Kitchen	On Heater Grill	4" x 4"	Ghost Wipe
Rochester RC-LW-15	Office 4-205	On window sill		
Rochester RC-LW-16	Classroom 4-215	On top of TV		
Rochester RC-LW-17	2nd Floor Hallway	On top of AED Box		
Rochester RC-LW-18	Office 267	on top of Shelf		
Rochester RC-LW-19	Classroom 267	On top of Podium		
Rochester RC-LW-20	Club 275	On top of the Ice Machine		
Rochester RC-LW-21	Lobby 241-C	On top of Filing Cabinet		
Rochester RC-LW-22	Office 231	On window sill		
Rochester RC-LW-23	Office 213	On top of Paper Schredder		
Rochester RC-LW-24	Classroom 282	On top of TV		
Rochester RC-LW-25	Conference Rm 280	On window sill	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Photographs

Building exterior, looking northwest

Drill Hall, looking northwest

Mess Hall, stained/moldy dropped-ceiling tile

Kitchen

Boiler room

Former indoor firing range

Conference room 280

1st floor hallway

2nd floor hallway

Appendix D

References

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 Jan 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

ECS CAROLINAS
Geotechnical • Construction Materials • Environmental

November 26, 2008

Ms. Non-Responsive
National Guard Bureau Region North
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

Reference: Industrial Hygiene Survey
Readiness Centers (RC)
Staten Island, New York
ECS Project No. 14-4876

Dear Ms. Non-Responsive

ECS Carolinas, LLP (ECS) is pleased to provide the results of our Industrial Hygiene survey for the referenced facility. Our services were provided in accordance with Army National Guard work order number W912K6-08-F-0063, dated June 12, 2008 and the requirements of the National Guard Bureau Region North Industrial Hygiene Office "*Statement of Work*".

If there are questions regarding this report, or a need for further information, please contact us.

Respectfully submitted,

ECS CAROLINAS, LLP

Non-Responsive
Industrial Hygiene Project Manager

Non-Responsive
Principal Scientist

I:\Environ\Report\4800\4876 ANG IH\Staten\4876 Staten Report.doc

68 Global Drive Greenville, South Carolina 29607 (864) 987-1610 FAX (864) 987-1615 www.ecslimited.com
Aberdeen, MD* • Atlanta, GA • Baltimore, MD • Chantilly, VA • Charlotte, NC • Chicago, IL • Cornelia, GA* • Dallas, TX
Danville, VA • Frederick, MD • Fredericksburg, VA • Greensboro, NC • Greenville, SC • Norfolk, VA • Orlando, FL • Research Triangle Park, NC
Richmond, VA • Roanoke, VVA • San Antonio, TX • Williamsburg, VA • Wilmington, NC • Winchester, VA • York PA
*Testing Services Only

INDUSTRIAL HYGIENE SURVEY

Conducted on

READINESS CENTER
321 MANOR ROAD
STATEN ISLAND, NEW YORK 10314

ECS Project No. 14-4876

For

National Guard Bureau
Region North Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

November 26, 2008

INDUSTRIAL HYGIENE SURVEY
READINESS CENTER
321 MANOR ROAD
STATEN ISLAND, NEW YORK 10314

TABLE OF CONTENTS

SECTION **PAGE**

APPENDIX

INDUSTRIAL HYGIENE SURVEY
READINESS CENTER
321 MANOR ROAD
STATEN, NEW YORK 10314

1.0 EXECUTIVE SUMMARY

ECS Carolinas, LLP (ECS) has completed an Industrial Hygiene Survey at the facility located at 321 Manor Road in Staten Island, New York. The report was prepared in general accordance with the *Statement of Work* provided by the National Guard Bureau Industrial Hygiene Region North. The objective of the survey was to identify and measure the existence and extent of potentially hazardous operations or conditions at the Army National Guard (ARNG) facilities identified in the work order. The surveys were performed to establish a baseline of workplace conditions or to update a previous survey and employee exposure histories.

The survey involved a facility reconnaissance and sampling of the Readiness Center. Readiness Centers (RC) serve as recruitment facilities, administration offices with a small facility able to maintain a garage or mechanics shop to fix and maintain various ARNG vehicles and equipment for the supported units when necessary. Staten Island RC included a twelve (12) bay maintenance area, a part supply area, administration offices, battery room, compressor room, arms room, instrument room, vault, and a utility room. At the time of the survey, several members of the unit were deployed and the shop was not operating at full capacity. The point of contact for the Staten Island RC facility was Felix Ramos.

Lighting measurements conducted during the survey indicated the illumination levels in vehicle maintenance and office areas are below the required levels.

The physical facility and the site health and safety plans were reviewed. Some written safety programs were missing or not provided to ECS. This missing information should be prepared for the facility and provided during the next facility survey. During the physical assessment of the facility, the following items were noted:

Vehicle Maintenance Area:

- Peeling and chipped paint present.
- Twelve (12) Local Exhaust Ventilation (LEV) drops present.
    - Some of these LEVs were not in full working order.
- PPE present in work area for workers use-
    - Ear Protection: Earplugs
    - Proper protective clothing: (Closed-toe shoes, long sleeves)
- Material Safety Data Sheets (MSDS) were observed in the area.
- Fire extinguishers are present and are current with routine inspections.

Parts Supply Room:

- General parts and supply storage area.
- No general ventilation system is present.
- Generally clean work area.

Tools Storage:

- Tool storage area.
- No general ventilation is present.
- Generally clean storage area.

Storage Room:

- General materials storage room.
- No general ventilation is present.
- Generally clean work and storage area.

Administrative Areas (Office's, Break room, Men's and Women's Restrooms):

- Posted training documents, warning signs, best work practices, fire evacuation plans.
- Fire extinguishers present and current with routine inspections.
- Window air conditioning units located in several of the administration offices.
- No general ventilation is present.
- Generally clean areas.

Battery Charging and Storage Area:

- No battery charging operations take place in this area.
- Battery storage and supply storage area.
- One (1) eye wash station is present.
- MSDS present.
- Generally clean and safe storage area.

2.0 INTRODUCTION

2.1 Scope of Work

ECS Carolinas, LLP (ECS) has completed an Industrial Hygiene Survey at the facility located at 321 Manor Road, in Staten Island, New York. The report was prepared in general accordance with the *Statement of Work* provided by the National Guard Bureau Industrial Hygiene Region North. The objective of the survey was to identify and measure the existence and extent of potentially hazardous operations or conditions at the Army National Guard (ARNG) facilities identified in the work order. The surveys were performed to establish a baseline of workplace conditions or to update a previous survey and employee exposure histories.

At the time of the survey, 22 members of the unit were present. Six (6) maintenance personnel were in the garage, and three (3) members of the administrative staff were present at the facility. Several members of the unit were deployed and the shop was not operating at full capacity. The point of contact for the Staten Island RC facility was Felix Ramos.

2.2 Facility Information and Description

The survey involved a facility reconnaissance and sampling of Staten Island RC. Readiness Centers (RC) serve as recruitment facilities and administration offices that maintain a garage or mechanics shop to perform simple repairs on various ARNG vehicles and equipment for the supported units. Staten Island RC included a twelve (12) bay maintenance area, a part supply area, administration offices, battery room, compressor room, arms room, instrument room, vault, and a utility room. The mechanics shop conducts vehicle maintenance for unit support. The garage is not an FMS and is not manned full time. At the time of the survey, several members of the unit were deployed, approximately twenty-two (22) persons were in the center and the shop was not operating at full capacity.

3.0 SAMPLING

3.1 Lead Wipes

Wipe samples were collected for lead dust in the administrative areas, Drill Hall, POP Room, Allied Trade Building, Mess Hall and Garage Instrument Room, and the Mechanics Shop. Sampling was conducted to determine if cross contamination was occurring in the non-maintenance areas of the facility. Since an Indoor Firing Range (IFR) has not been in existence at this particular facility nor has one been converted to any other use on the site, lead wipes were collected according to the scope of work. The lead wipe results can be seen in the following table:

Table 3.1.1 Lead Wipe Sample Results

Sample Number	Location	Results ($\mu g/ft^2$)
LW-1	Office #14-Top of Cubby	120
LW-2	Office #2-Top of Door	<110
LW-3	Room #15-Outside of door on the floor	<110
LW-4	Room #4-Top of AC Unit	590
LW-5	Room #11-Top of Bookcase	190
LW-6	Room #31-Window Sill	870
LW-7	Room #60-Top of Door Sill	670
LW-8	Room #34-Window Sill	1100
LW-9	POP Room-Window Sill	880
LW-10	Room #90F-2nd Floor	<110
LW-11	Mess Hall 2nd Floor-Window Sill),	530
LW-12	Drill Hall-Floor by TAC Supply Room	510
LW-13	Drill Hall-Electrical Conduit-Left	1600
LW-14	Drill Hall-Top of Electrical Panel	1000
LW-15	Drill Hall-Floor by Kitchen	800
LW-16	Right Side Conduit	4300
LW-17	Garage-Bay #3	2100
LW-18	Shop B Garage-Heater Unit #7	<110
LW-19	Garage Instrument Room on Shelf	170
LW-20	Allied Trade Building-Work Bench	220
LW-21	Allied Trades Building-Top of Supervisor Bookcase	<110

3.2 Additional Sampling Information

Since welding operations and parts washing, are not conducted at this facility samples were not collected for welding fumes, volatile organic compounds or acid gases during the survey.

Indoor air quality measurements including temperature, relative humidity and carbon dioxide were collected in various locations throughout the facility and are presented in the following table:

Table 3.2.1 Indoor Air Quality (IAQ) Meter Measurements

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)
Administrative Offices	80.0	33.9	657
Shop Office	76.5	47.5	512
Room #4	75.6	52.2	481
Room #14	72.6	41.6	1155

Since outside air readings were not required to be collected, the results were compared to the ASHRAE standards for ventilation of acceptable indoor air quality.

The American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) has determined that a carbon dioxide (CO_2) level greater than 1000 ppm indicate that not enough outdoor air is coming into the building to dilute the carbon dioxide level. The CO_2 levels measured in Room#14 were elevated at the time of the survey; fresh air should to be increased to this location.

ASHRAE standards state that systems within the building should establish a relative humidity in occupied space to be 65% or less. The levels measured at the Staten Island RC facility indicate that the relative humidity is below the required standard for indoor air quality.

Personnel samples measuring airborne lead levels were collected from within the breathing zone of two staff members on site at the Staten Island RC facility. Each employee was monitored for their full time on-site the day the site visit was conducted, which was approximately five hours. Samples analyzed indicate that the results were below the OSHA permissible exposure limit of 50 ug/m³. Results have been listed in the following table:

Table 3.2.2 Personnel Samples-Lead

Staff Member being Monitored	Pump ID	Sample Collection Times (Hours)	Total Liters (L) collected	Concentration Ug/m³	Lab Results Above Permissible Exposure Limit
Non-Responsive [redacted] SGT	5134	1130-1630	734.4	<6.8 ug/m³	No
PF Non-Respons [redacted]	3051	1130-1630	776.1	<6.4 ug/m³	No

4.0 VENTILATION ASSESSMENT

4.1 General Ventilation

General building ventilation is provided to the administrative areas of the building through wall uni-vent units. In the maintenance areas cooling is provided by the roll-up doors and fans. Twelve LEVs are located in the vehicle maintenance area. Some of these units were not in full working order at the time of the site assessment.

The velocity meter was not calibrated by Staten Island staff prior to ECSs site visit; therefore measurements were not collected during the site walkthrough.

Ventilation measurements were not collected in the battery storage room. Roll-up doors located in the vehicle maintenance area provide fresh air to the room when the door remains open. Direct ventilation is not present.

5.0 NOISE DOSIMETRY

Noise sampling was not conducted during the survey; active vehicle maintenance does not occur on site.

6.0 LIGHTING EVALUATION

Illumination levels were recorded in each area in closed door conditions and compared to the ANSI minimum lighting requirement (ANSI/IESNA RP-7-01). Recorded illumination measurements are presented in the following table and are presented on the illumination plan in Appendix I.

Table 6.1 Illumination Measurements

Location	Measured Illumination Level in Foot Candles (FC)	Required Illumination Level	Requirement Met?
Garage Restroom	73.7	5	Yes
Supply Room	4.9	30	No
Instrument Room	43.0	30-50	Yes
Bay 1, 2, & 3	21.3	75	No
Shop Surplus	36.7	30-50	Yes
Production Control	49.5	75	No
Bay 4 & 5	4.9	75	No
Break Room	21.5	10	Yes
Vehicle Storage	11.8	10	Yes
Mess Hall	18.8	10	Yes
Kitchen	22.4	50	No
Break Room/Conference Room	69.6	50	Yes
Office in Shop	18.2	50	No
Room #2 (Office)	75	50	Yes
Room #4 (Office)	81	50	Yes
Room #5 (Office)	46.6	50	No
Room #7 (Office)	23.7	50	No

Location	Measured Illumination Level in Foot Candles (FC)	Required Illumination Level	Requirement Met?
Room #8 (Office)	35	50	No
Room #9 (Office)	32	50	No
Room #11 (Office)	37.1	50	No
Room #12 (Office)	46.1	50	No
Room #14 (Office)	27.4	50	No
Room #15 (Office)	20.4	50	No
Room #16 (Office)	39.0	50	No
Room #17 (Office)	48	50	No
Room #18 (Office)	33.9	50	No
Room #19 (Office)	27	50	No
Room #27C (Office)	19.8	50	No
Room #31 (Office)	32.4	50	No
Room #32 (Office)	7.6	50	No
Room #33 (Office)	25.1	50	No
Room #34 (Office)	11.5	50	No
Room #35 (Office)	25.2	50	No
Room #50 (Office)	120	50	Yes
Room #51 (Office)	71	50	Yes
Room #55 (Office)	101	50	Yes
Room #56 (Office)	79.4	50	Yes
Room #60 (Office)	100	50	Yes
Room #63A (Office)	33.7	50	No

7.0 REVIEW OF SAFETY PLANS AND POLICIES

7.1 Written Safety Plans

ECS reviewed on-site health and safety plans during our site visit. Below are the listed plans available and the plans recommended for these facilities.

Plans Available:

- Fire Evacuation Plan

Plans Recommended:

- Hazard Communication
- Hearing Conservation

7.2 Personal Protective Equipment (PPE)

Written information could not be made available when requested for review by ECS during the site visit. Hearing protection: ear plugs, have been provided to staff and may be used at their own discretion. Proper protective clothing such as long sleeved shirts and steel-toed boots are recommended for use in the vehicle maintenance area. No additional information was available for review.

8.0 PHYSICAL CONDITIONS & EMPLOYEE INTERVIEWS

ECS observed damaged and peeling paint throughout Room #31. Approximately ten (10) ten square feet of paint was noted as being significantly damaged. One paint chip sample was collected at eye level from the peeling paint on the wall and sent to AMA Analytical Laboratories, Inc. to measure the lead content. Laboratory results indicate that this paint chip sample contains 4.6% lead. The Environmental Protection Agency (EPA) states that lead-based paint with results over 0.05% is considered to be hazardous to human health.

ECS did not observe potential asbestos containing materials (ACM) in the Staten Island RC facility.

Hydraulic fluid or some type of hydrocarbon based substance was located along the left side of the Drill Hall floor during the ECS walkthrough. The liquid substance is collecting on floor and creating a slip-hazard.

9.0 FINDINGS AND CONCLUSIONS

Following are the findings of this Industrial Hygiene Survey:

- Two personnel samples were collected for lead dust in the air. The concentration of lead detected was <6.8 µg/m^3 and <6.4 µg/m^3. This is below the OSHA PELs.

- One bulk sample of paint was sent to AMA Analytical Laboratories and found to contain 4.6% lead.

- LEVs were noted as being out of service or not in full working order in the vehicle maintenance area.

- Wipe samples collected for lead dust in the administrative areas of the facility indicated that lead was detected in approximately thirteen (13) of the samples collected. These results are above the NGB Region North IH office guidelines acceptable level of 200 µg/ft^2. The lead dust appears to be scattered throughout the facility in administrative offices and hallways. The Drill Hall appears to be contaminated throughout as does the garage area.

- Lighting measurements conducted during the survey indicated the illumination levels in several areas are below the required levels.

- Elevated carbon dioxide levels were measured in Room#14 during the survey.

- Some written safety programs were missing or not provided to ECS. This missing information should be prepared for the facility and provided during the next facility survey.
    - Hazard Communication
    - Hearing Conservation

10.0 REFERENCES

Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration.

Lead - (29 CFR 1910.1025(h))

American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2008 Edition

Industrial Ventilation: A Manual of Recommended Practice for Design, 25th Edition

Georgia Army National Guard: Standard Army Safety and Occupational Health Inspection Checklist; 1 October 1999 Edition

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Ventilation for Acceptable Indoor Air Quality, 62-1-2007.

National Emission Standard Hazardous Air Pollutants (NESHAP) - The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3))

Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM)

The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation

29 CFR 1910.1000 Air Contaminants, Table Z-1, Occupational Safety and Health Administration, US DOL, Washington, DC

ANSI RP-1-04, American National Standard Practice for Office Lighting, 2004

ANSI RP-7-01, Lighting Industrial Facilities, 2001

Industrial Ventilation, A Manual of Recommended Practice, 25th Edition, ACGIH, 2004

2008 TLVs and BEIs, ACGIH, 2006

DA PAM 40-501, Hearing Conservation Program, Department of the Army, 1998

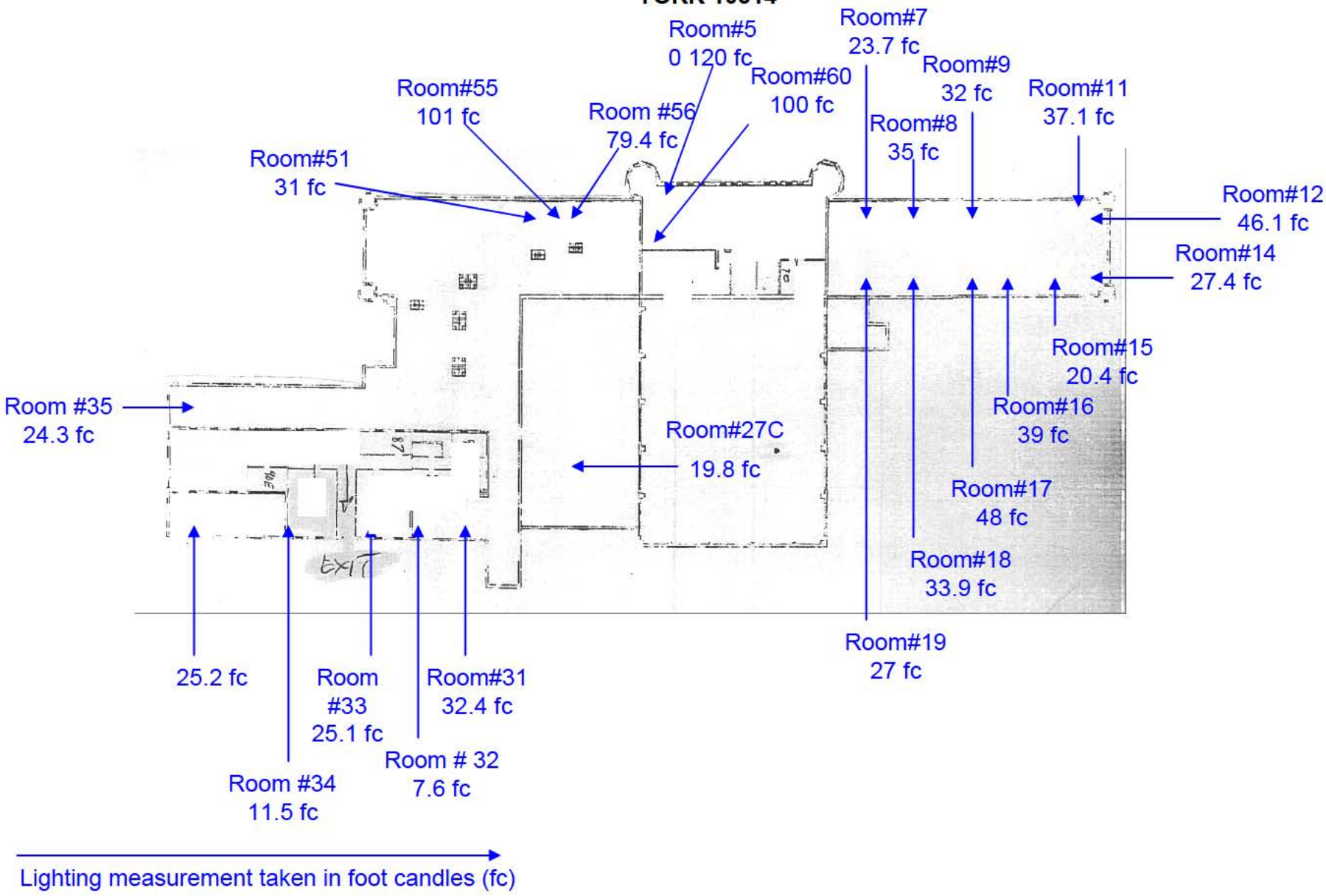
ANSI/ASHRAE 55-204

ANSI/ASHRAE 62.1-2007

APPENDIX I

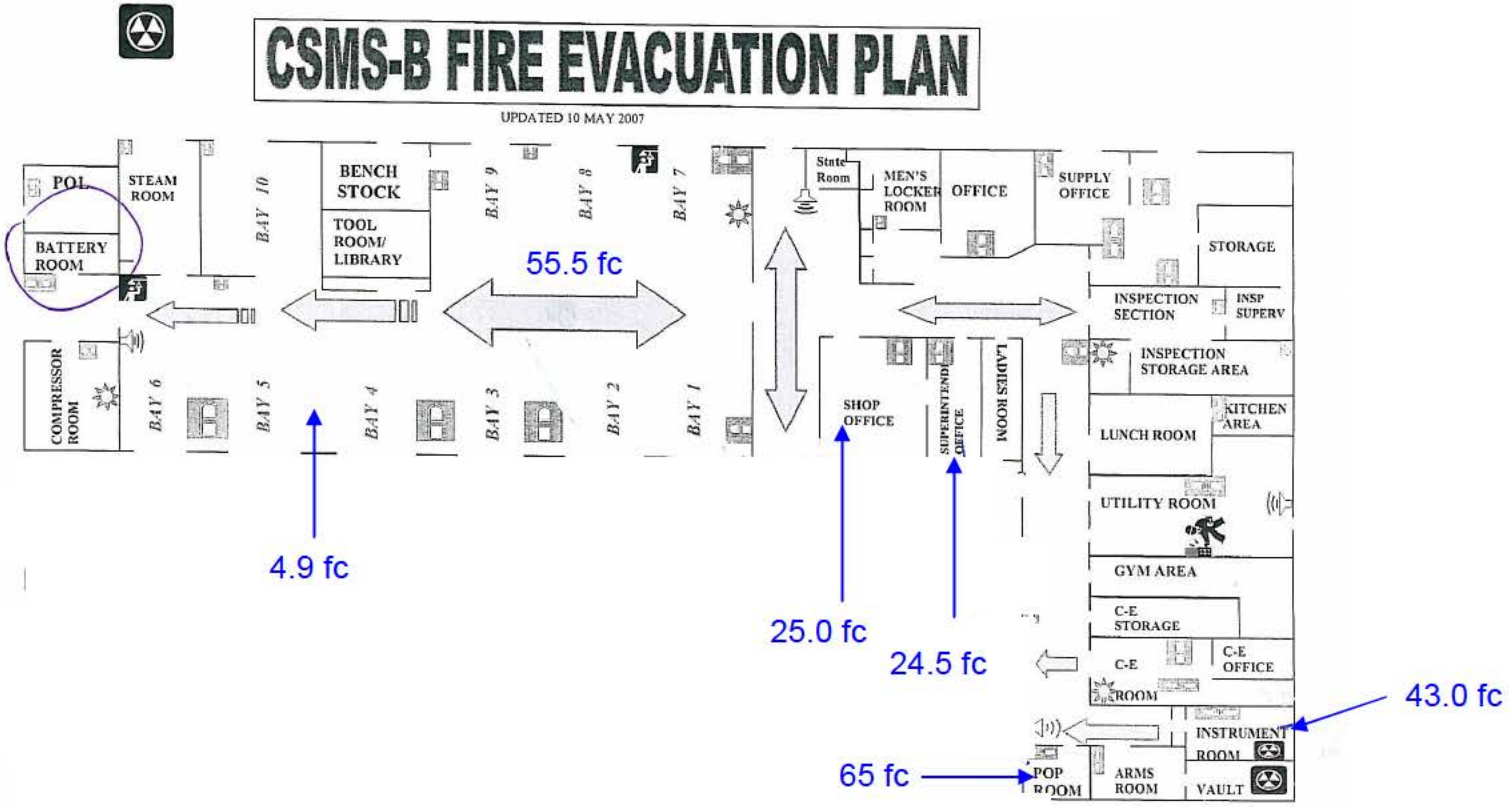
FIGURES

READINESS CENTER
321 MANOR ROAD
STATEN ISLAND, NEW YORK 10314



BEST AVAILABLE COPY

READINESS CENTER
321 MANOR ROAD
STATEN ISLAND, NEW YORK 10314
Garage



Lighting measurement taken in foot candles (fc)

APPENDIX II

PHOTOGRAPHS

Industrial Hygiene Survey
Readiness Center
Staten Island, New York
ECS Project No. 14-4876

Photo 1: Staten Island Readiness Center

Photo 2: Out of date fire extinguisher inspection record.

Photo 3: Example of peeling paint

APPENDIX III

LEAD WIPE RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead See aihaldap.org for details
100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	National Guard	**Chain Of Custody:**	159391		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	321 Manor Road; Staten Island, NY	**Date Submitted:**	7/28/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	[redacted]		
		P.O. Number:	Not Provided	**Date Analyzed:**	8/1/2008	**Report Date:**	8/1/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result			Comments
0873308	1A	Flame	Air	441	N/A	6.80	ug/m³	<	6.8	ug/m³	
0873309	2A	Flame	Air	466	N/A	6.44	ug/m³	<	6.4	ug/m³	
0873310	3A	Flame	Air Blank	0	N/A	3.00	ug/m³	<	3	ug	
0873311	4A	Flame	Paint Chip	****	N/A	0.01	%Pb		4.6	%Pb	
0873312	1	Flame	Wipe	****	0.108	111.52	ug/ft²		120	ug/ft²	
0873313	2	Flame	Wipe	****	0.108	111.52	ug/ft²	<	110	ug/ft²	
0873314	3	Flame	Wipe	****	0.108	111.52	ug/ft²	<	110	ug/ft²	
0873315	4	Flame	Wipe	****	0.108	111.52	ug/ft²		590	ug/ft²	
0873316	5	Flame	Wipe	****	0.108	111.52	ug/ft²		190	ug/ft²	
0873317	6	Flame	Wipe	****	0.108	111.52	ug/ft²		870	ug/ft²	
0873318	7	Flame	Wipe	****	0.108	111.52	ug/ft²		670	ug/ft²	
0873319	8	Flame	Wipe	****	0.108	111.52	ug/ft²		1100	ug/ft²	
0873320	9	Flame	Wipe	****	0.108	111.52	ug/ft²		880	ug/ft²	
0873321	10	Flame	Wipe	****	0.108	111.52	ug/ft²	<	110	ug/ft²	
0873322	11	Flame	Wipe	****	0.108	111.52	ug/ft²		530	ug/ft²	
0873323	12	Flame	Wipe	****	0.108	111.52	ug/ft²		510	ug/ft²	
0873324	13	Flame	Wipe	****	0.108	111.52	ug/ft²		1600	ug/ft²	
0873325	14	Flame	Wipe	****	0.108	111.52	ug/ft²		1000	ug/ft²	
0873326	15	Flame	Wipe	****	0.108	111.52	ug/ft²		800	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	National Guard	**Chain Of Custody:**	159391
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	321 Manor Road; Staten Island, NY	**Date Submitted:**	7/28/2008
	Havre de Grace, Maryland 21078	**Job Number:**	14-4876	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	8/1/2008 **Report Date:** 8/1/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0873327	16	Flame	Wipe	****	0.108	111.52	ug/ft²	4300	ug/ft²	
0873328	17	Flame	Wipe	****	0.108	111.52	ug/ft²	21000	ug/ft²	
0873329	18	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	
0873330	19	Flame	Wipe	****	0.108	111.52	ug/ft²	170	ug/ft²	
0873331	20	Flame	Wipe	****	0.108	111.52	ug/ft²	220	ug/ft²	
0873332	21	Flame	Wipe	****	0.108	111.52	ug/ft²	< 110	ug/ft²	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.

NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analyst: Non-Responsive [redacted]

Technical Manager: Non-Responsive [redacted]

An AIHA (#100470), NVLAP (101143-0), and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 159391

Mailing/Billing Information:
1. Client Name: National Guard Northern Unit
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: _____ Fax #: _____

Submittal Information:
1. Job Name: National Guard
2. Job Location: 321 MANOR Road Staten Island
3. Job #: 14-[redacted]
4. Contact Person: [redacted] @ p[redacted] # 646-444-9360
5. Submitted by: [redacted] nature: [redacted]

☒ Please include COC/field data sheets with results **Reporting Information (Results will be provided as [redacted])**
Date & Time Results Required: 8 / 4 / 08 @ 1700 ☐Immd. ☐24hr ☐48hr ☐72hr ☒5 Day + ☐Immd. After-Hours* ☐24hr After Hours* ☐Late Night* (*must be pre-scheduled)
❑ Verbals: _____ @ cell # _____ ❑ Fax Copy: _____ @ fax # _____ ❑ Email Cop[redacted] @ ecslimited.com

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ NIOSH 7400_____(QTY)
❑ Fiberglass_____(QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ AHERA_____(QTY)
❑ NIOSH 7402_____(QTY)
❑ Other (specify_____)_____(QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate_____(QTY)
❑ EPA Point Count_____(QTY)
❑ NY State Friable 198.1_____(QTY)
❑ Grav. Reduction ELAP 198.6_____(QTY)
❑ Other (specify_____)_____(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield_____(QTY)
❑ NY State PLM/TEM_____(QTY)
❑ Residual Ash_____(QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust_____(QTY)
❑ Quan. (s/area) Vacuum D5755-95_____(QTY)
❑ Quan. (s/area)Dust D6480-99_____(QTY)
TEM Water
❑ Qual. (pres/abs)_____(QTY)
❑ ELAP 198.2/EPA 100.2_____(QTY)
❑ EPA 100.1_____(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____°C)

Lead Analysis
☒ Paint Chip 1 (QTY)
☒ Dust Wipe (wipe type CSHA) 21 (QTY)
☒ Air 3 (QTY)
❑ Soil/Solid_____(QTY)
❑ TCLP_____(QTY)
❑ Drinking Water_____(QTY)
❑ Waste Water_____(QTY)
❑ Dust Wipe Furnace (wipe type_____)_____(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap_____(QTY) ❑ Bulk_____(QTY)
❑ Surface Swab_____(QTY) ❑ Surface Vacuum Dust_____(QTY)
❑ Surface Tape_____(QTY) ❑ Other (Specify_____)_____(QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	WORK HEAD	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
1A	SGT. Chen	7/18	441					X		X							Date/Time: Contact: By:
2A	PFC Garcia	7/18	466					X		X							
3A	Blank	7/18	—					X		X							
4A	Rm 31	7/18		10 SF				X			X						
1	office 14	7/18		Top of cubby				X				X					Date/Time: Contact: By:
2	office 2	7/18		top door				X				X					
3	Rm 15	7/18		out side door floor				X				X					
4	Rm 4	7/18		A Top of				X				X					
5	Rm 11	7/18		Top of Bookcase				X				X					Date/Time: Contact: By:
6	Rm 31	7/18		window sill				X				X					
7	Rm 60	7/18		Top of Door sill				X				X					
8	Rm 34	7/18		window sill				X				X					
9	POP Rm	7/18		windows sill				X				X					

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 7 / 28 / 08 @ 1030 Via: Fedex By (Print): [redacted] Sign: [redacted]
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____ / ____ / ____ Time: _____ Initials: _____
4. Comments: _____

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Staten Island Readiness Center
Staten Island, NY. 10314-2407

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
December 20, 2012

Bonus Environmental, LLC

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APPENDICES

December 20, 2012
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Staten Island, NY Readiness Center

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Staten Island Readiness Center located at 321 Manor Road in Staten Island, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Health & Safety plans available for review at Staten Island Readiness Center included Hazcom (the Superintendent stated that several others, including respiratory protection, PPE, and hearing conservation exist, but that he couldn't find them), which was determined to meet the minimum requirements. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on October 25, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Staten Island Readiness Center is an Army National Guard armory comprised of offices, locker rooms, storage rooms, a drill hall, supply rooms, conference rooms, a gym, a museum, classrooms, 2 kitchens, a mess hall, and a former indoor firing range (currently used for storage). The point of contact for the approximately 43,828 ft² Staten Island Readiness Center is Mr. Non-Responsive, along with Superintendent Orlando Pinnock. Twelve (12) full-time administrative personnel are employed at the Staten Island Readiness Center. A shop diagram depicting the locations of the operations identified during this industrial hygiene evaluation, as well as airflow patterns, is provided as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial

hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twenty five (25) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project

Army National Guard – Staten Island Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
SIRC-LW-1	10-25-12	Field Blank	---	< 12 μg
SIRC-LW-2	10-25-12	Drill Hall, east end, on floor	0.111	< 110
SIRC-LW-3	10-25-12	Drill Hall, west end, on floor	0.111	< 110
SIRC-LW-4	10-25-12	Drill Hall, west wall, top of AED case	0.111	110
SIRC-LW-5	10-25-12	Drill Hall, south wall, top of fire hose housing	0.111	1,900
SIRC-LW-6	10-25-12	Drill Hall, NE corner, top of circuit breaker box	0.111	460
SIRC-LW-7	10-25-12	Kitchen, east wall, top of paper towel dispenser	0.111	< 110
SIRC-LW-8	10-25-12	Former indoor firing range, east end, on floor	0.111	7,700
SIRC-LW-9	10-25-12	Former indoor firing range, west end, on floor	0.111	2,300
SIRC-LW-10	10-25-12	Former indoor firing range, center of room, on light fixture	0.111	340
SIRC-LW-11	10-25-12	Boiler room, on slop sink	0.111	450
SIRC-LW-12	10-25-12	Room 35, SW corner, on storage shelf	0.111	330
SIRC-LW-13	10-25-12	Room 33, NE corner, on window sill	0.111	< 110
SIRC-LW-14	10-25-12	Room 31, south wall, on thermostat	0.111	300
SIRC-LW-15	10-25-12	Room 42A, SW corner, top of piano	0.111	< 110
SIRC-LW-16	10-25-12	Room 60, center of conference table	0.111	< 110
SIRC-LW-17	10-25-12	Room 4, east wall, top of desk shelf	0.111	< 110

Army National Guard – Staten Island Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
SIRC-LW-18	10-25-12	Room 20, east wall, top of paper towel dispenser	0.111	< 110
SIRC-LW-19	10-25-12	Room 9, SE corner, top of desk shelf	0.111	< 110
SIRC-LW-20	10-25-12	Room 16, SE corner, top of file cabinet	0.111	< 110
SIRC-LW-21	10-25-12	Mess hall, north end, on heat register	0.111	130
SIRC-LW-22	10-25-12	Room 65, south end, on window sill	0.111	< 110
SIRC-LW-23	10-25-12	Room 96, west wall, on heat register	0.111	< 110
SIRC-LW-24	10-25-12	Room 88, SE corner, top of file cabinet	0.111	500
SIRC-LW-25	10-25-12	Room 90F, center of room, top of printer	0.111	< 110
SIRC-LW-26	10-25-12	Room 90D, north end, top of telecom box	0.111	< 110

Surface cleanliness threshold = < 200 micrograms per square foot ($\mu g/ft^2$)

It is uncertain whether the former indoor firing range was remediated to the protocols specified in NG Pam 420-15. Remediation occurred approximately ten years previous. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Staten Island Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified the following area of peeling paint which could potentially pose a lead exposure hazard:

- Approximately 60 ft^2 of peeling white paint in room 26, electrical room;

One (1) paint chip sample was collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. Analysis indicated that the peeling paint collected did not contain detectable levels of lead. The paint is therefore not considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Staten Island Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC identified the following PACM that were considered to be in poor or damaged condition:

- Approximately 1 lf of damaged thermal systems insulation (TSI) in the Drill Hall;

Sample analysis indicated this mudded pipe elbow fitting material to be non-detect for asbestos content. Asbestos bulk sample results are attached to this report as Appendix C

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Staten Island Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials or visible mold problems. Bonus Environmental, LLC identified the following areas of water-damaged and/or moldy building materials:

- Approximately 3 ft^2 of moldy fiberglass pipe insulation in the Boiler room;
- Approximately 1 ft^2 of stained dropped-ceiling tile (DCT) in office room 30A;
- Approximately 6 ft^2 water-damaged ceiling in room 58, restroom;
- Approximately 3 ft^2 of stained DCT in office room 4A;

3.4 - Housekeeping

During the industrial hygiene evaluation of the Staten Island Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Staten Island Readiness Center facility in good order.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Staten Island Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and/or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Staten Island Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 8554 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements

collected indoors during this industrial hygiene evaluation ranged from 374 ppm to 542 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected indoors during this industrial hygiene evaluation ranged from 0.0 ppm to 0.7. CO levels were well below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Staten Island Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 66.2ºF to 70.2ºF and are considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Staten Island Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 58.9% to 64.8%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Staten Island Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, west side of building (overcast, mild)	367	1.3	67.2	65.8
Basement, NCO Club	396	0.0	60.4	69.4
Room 35, Maintenance office	441	0.6	64.8	66.5
Room 33, Male locker room	386	0.4	61.1	66.2
Gym	374	0.6	61.4	68.2
Room 51, Commander's office	441	0.0	58.9	69.4
Room 60, Conference room	403	0.0	63.4	68.0
Room 4, AGR office	542	0.5	59.2	70.2
Room 16, Supply office	507	0.7	58.9	70.0
Drill Hall	389	0.5	61.3	68.0
2nd floor, Mess Hall	409	0.3	62.2	68.4

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Staten Island Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Staten Island Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Room 75 (Boiler room)	13.3	30	No
Room 77 (Mechanical room)	5.9	30	No
Room 74 (NCO Club)	12.1	10	Yes
Room 74A (Kitchen)	20.9	50	No
Room 74B	Inaccessible		
Room 73 (Supply)	Inaccessible		
Room 72 (restroom)	29.4	5	Yes
Room 81 (Former indoor firing range)	6.3	150	No
Room 86 (locker room)	3.4	7	No
Room 85 (locker room)	7.9	7	Yes
Room 35 (office)	67.6	50	Yes
Room 35A (storage)	11.6	30	No
Room 35B (storage)	13.4	30	No
Room 34 (locker room)	7.7	7	Yes
Room 33 (locker room)	6.0	7	No
Room 32 (classroom)	9.8	30	No
Room 38 (restroom)	85.1	5	Yes
Room 31 (gym)	13.5	30	No
Room 30 (office)	74.1	50	Yes
Room 30A (office)	15.8	50	No
Room 41 (locker room)	76.4	7	Yes
Room 41A (closet)	Inaccessible		
Room 41B (restroom)	63.2	5	Yes
Room 42 (foyer)	99.0	10	Yes
Room 42A (museum)	13.9	50	No
Room 43 (storage)	44.5	30	Yes
Hallway	13.3	5	Yes
Room 51 (office)	15.6	50	No
Room 55 (office)	15.1	50	No
Room 56 (office)	28.3	50	No
Room 58 (restroom)	91.6	5	Yes
Room 60 (conference room)	71.6	30	Yes
Room 61 (storage)	22.2	30	No
Room 49 (office)	15.1	50	No
Room 50 (office)	68.1	50	Yes
Room 62A (office)	35.9	50	No
Room 2 (office)	23.4	50	No
Room 4 (office)	79.6	50	Yes
Room 4A (office)	40.2	50	No
Room 4B (office)	24.3	50	No
Room 22 (locker room)	9.8	7	Yes

Army National Guard – Staten Island Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Room 22A (restroom)	68.8	5	Yes
Room 20 (restroom)	44.2	5	Yes
Room 5 (office)	92.0	50	Yes
Room 19 (office)	21.3	50	No
Room 7 (office)	26.8	50	No
Room 8 (office)	41.0	50	No
Room 18 (office)	18.8	50	No
Room 17 (office)	44.0	50	No
Room 9 (office)	36.0	50	No
Room 16 (office)	76.4	50	Yes
Room 10 (conference room)	23.4	30	No
Room 15 (office)	65.8	50	Yes
Room 11 (office)	26.4	50	No
Room 12 (office)	29.8	50	No
Room 14 (office)	82.1	50	Yes
Drill Hall	25.2	30	No
Room 27A	Inaccessible		
Room 27B (Supply)	35.4	30	Yes
Room 27C	Inaccessible		
Room 27D	Inaccessible		
Room 25 (Kitchen)	79.4	50	Yes
Room 26 (electrical room)	8.0	30	No
Room 69 (storage)	53.6	30	Yes
Room 70 (storage)	54.2	30	Yes
Room 65 (office)	17.7	50	No
Mess Hall	101.4	10	Yes
Room 96 (storage)	75.5	30	Yes
Room 87	Inaccessible		
Room 88 (workshop)	132.5	75	Yes
Room 89 (storage)	4.0	30	No
Room 90A (office)	45.6	50	No
Room 90C (storage)	73.6	30	Yes
Room 90D (office)	34.3	50	No
Room 90E (storage)	99.7	30	Yes
Room 90F (office)	12.1	50	No
Room 92 (office)	12.4	50	No
Room 93 (office)	28.3	50	No
Room 94 (storage)	74.3	30	Yes

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out

lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Staten Island Readiness Center located at 321 Manor Road in Staten Island, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Health & Safety plans available for review at Staten Island Readiness Center included Hazcom (the Superintendent stated that several others, including respiratory protection, PPE, and hearing conservation exist, but that he couldn't find them). The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on October 25, 2012:

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Staten Island Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15.

2. Bonus Environmental, LLC identified an area of peeling paint which did not contain detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC identified a PACM (that analytical results confirmed to contain >1% asbestos-content) that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified approximately 3 ft² of moldy fiberglass pipe insulation in the Boiler room.

5. Bonus Environmental, LLC identified approximately 10 ft² of water-damaged/stained drop ceiling tile and/or ceiling material from three locations.

6. Bonus Environmental, LLC found the housekeeping practices within the Staten Island Readiness Center to be in good order.

7. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

8. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Staten Island Readiness Center. All were found to be below or within their acceptable ranges/limits.

9. Areas within the Staten Island Readiness Center facility were identified as improperly illuminated.

10. A Hazcom Health & Safety program was available for review at the Staten Island Readiness Center.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

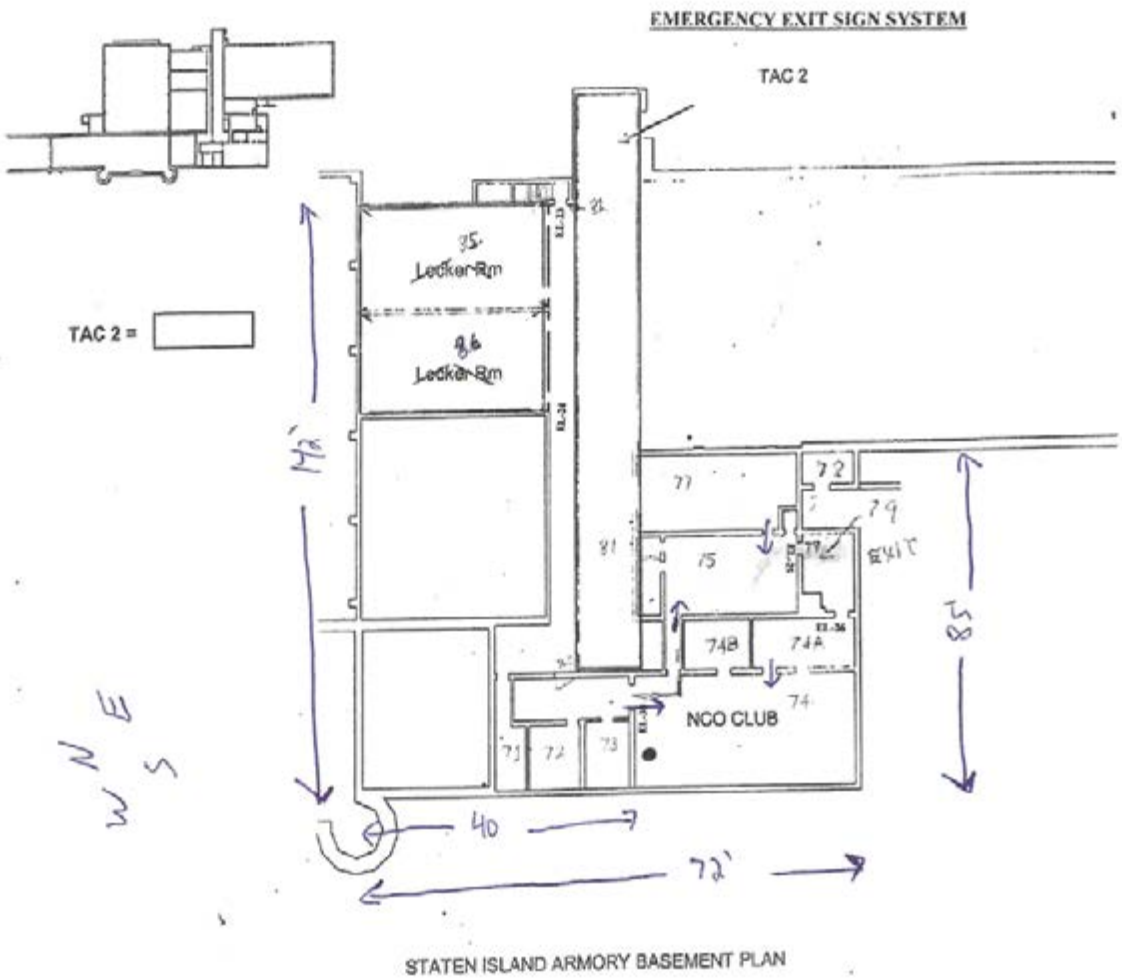
Sincerely,

Non-Responsive

Principal
Bonus Environmental, LLC

Appendix A

Shop Diagram and Air Flow Patterns



STATEN ISLAND ARMORY BASEMENT PLAN

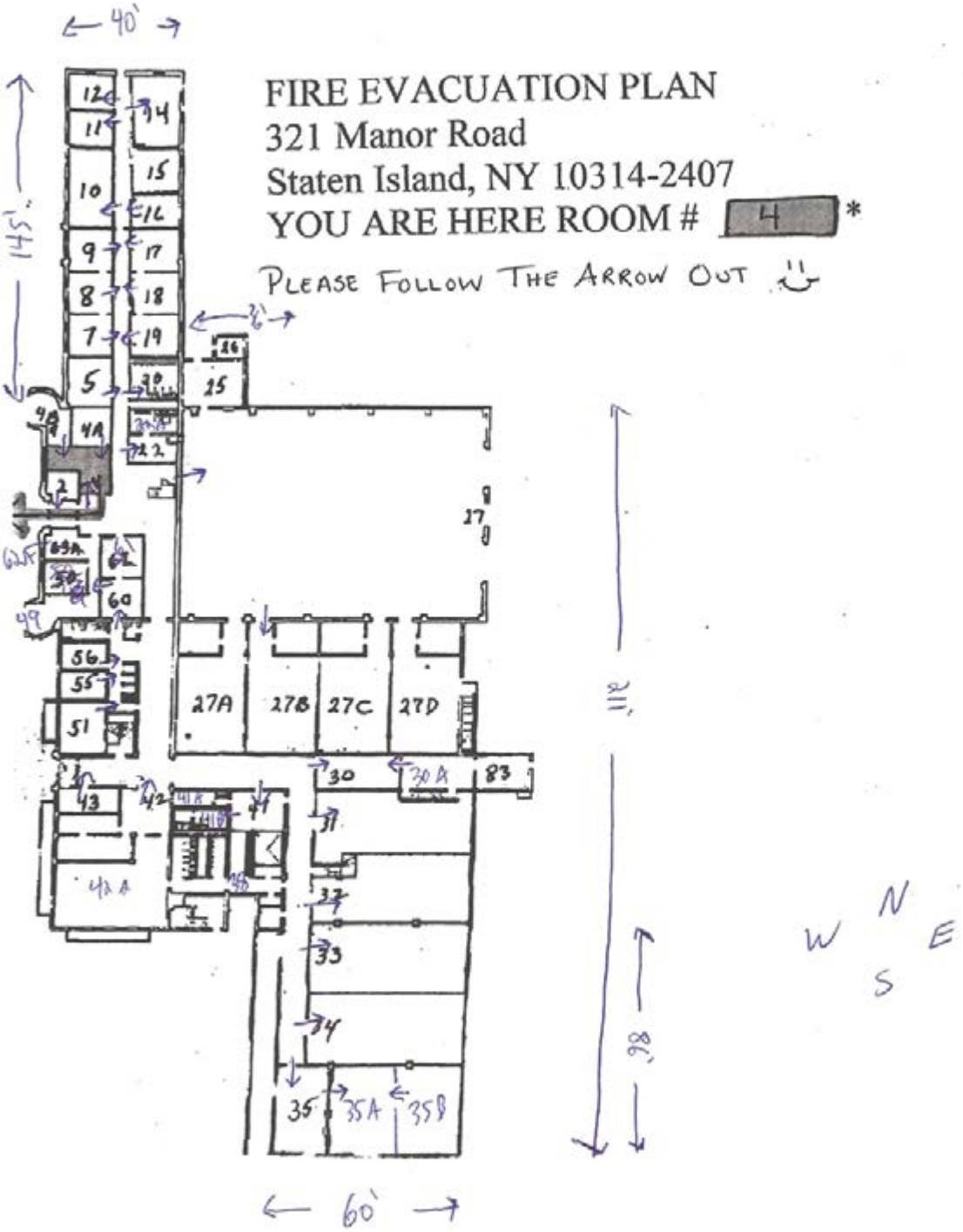
FIRE EVACUATION PLAN
321 MANOR ROAD
STATEN ISLAND, N.Y. 10314
YOU ARE HERE

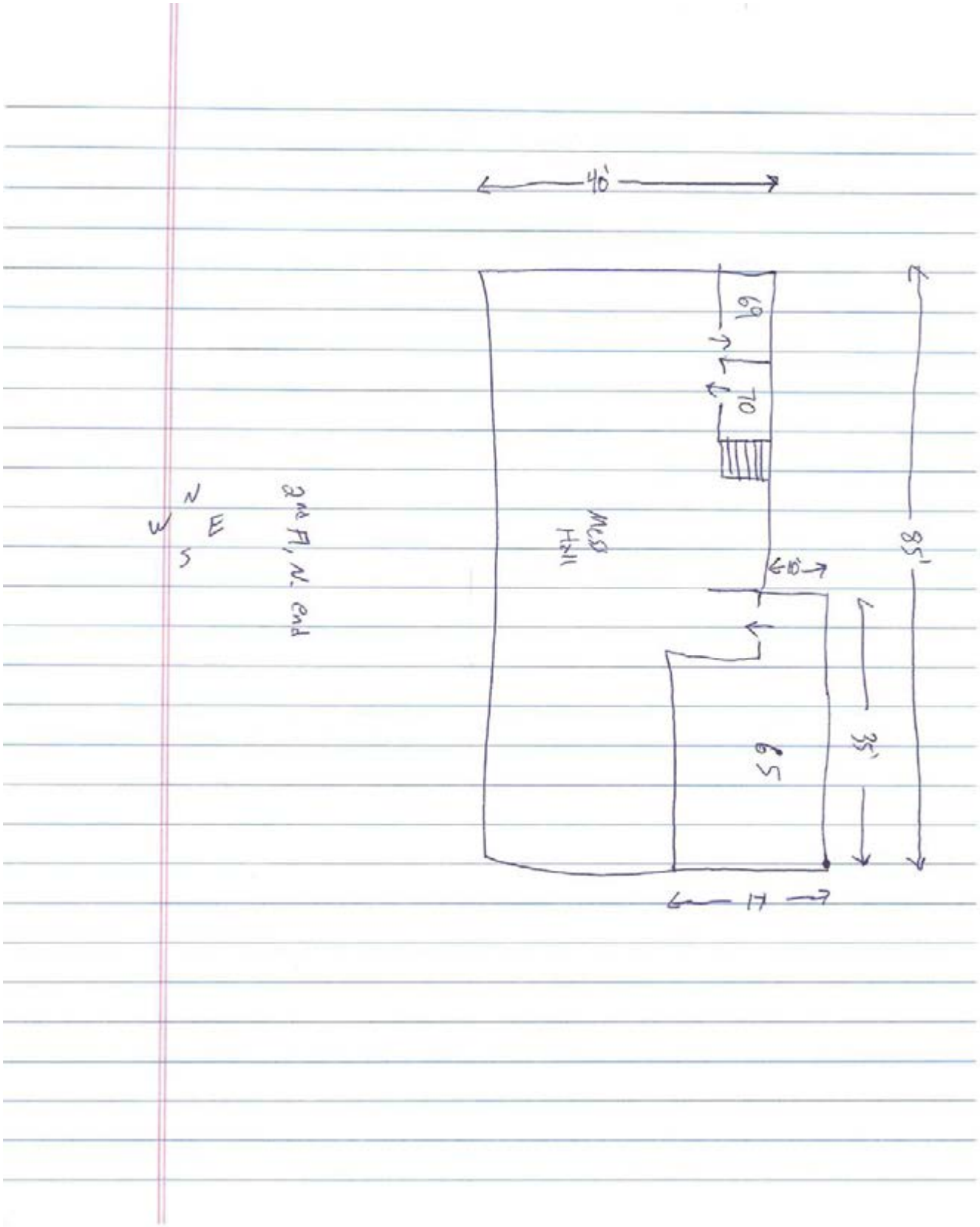
ROOM # 75

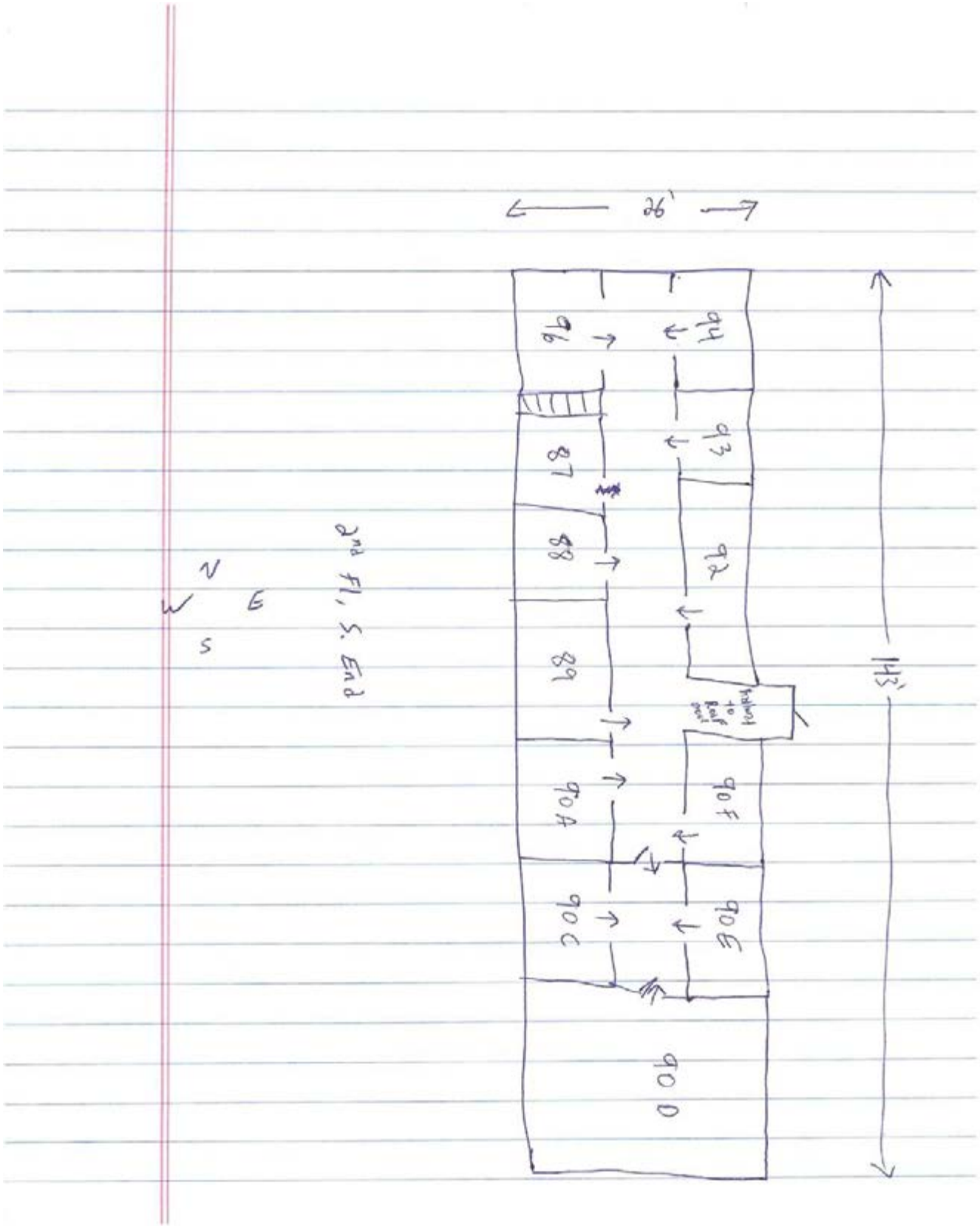
FIRE EVACUATION PLAN

321 Manor Road
Staten Island, NY 10314-2407
YOU ARE HERE ROOM # 4 *

PLEASE FOLLOW THE ARROW OUT







Appendix B

Lead Sample Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Staten Island RC	Chain Of Custody:	514362
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Staten Island, NY	Date Submitted:	11/2/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/8/2012 Report Date: 11/9/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13010534	SI-PC-1	Flame	Paint Chip	****	N/A	0.008	%Pb		<0.008	%Pb	
13010535	SI-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13010536	SI-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13010537	SI-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13010538	SI-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	12	110	ug/ft²	
13010539	SI-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	210	1900	ug/ft²	
13010540	SI-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	51	460	ug/ft²	
13010541	SI-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13010542	SI-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	860	7700	ug/ft²	
13010543	SI-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	250	2300	ug/ft²	
13010544	SI-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	38	340	ug/ft²	
13010545	SI-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	50	450	ug/ft²	
13010546	SI-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	37	330	ug/ft²	
13010547	SI-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13010548	SI-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	33	300	ug/ft²	
13010549	SI-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13010550	SI-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13010551	SI-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13010552	SI-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

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INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Staten Island RC	Chain Of Custody:	514362
Address:	301-H Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Staten Island, NY	Date Submitted:	11/2/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/8/2012 Report Date: 11/9/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13010553	SI-LW-19	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13010554	SI-LW-20	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13010555	SI-LW-21	Flame	Wipe	****	0.111	110	ug/ft^2	15	130	ug/ft^2	
13010556	SI-LW-22	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13010557	SI-LW-23	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13010558	SI-LW-24	Flame	Wipe	****	0.111	110	ug/ft^2	55	500	ug/ft^2	
13010559	SI-LW-25	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13010560	SI-LW-26	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	

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Client:	National Guard Bureau	**Job Name:**	Staten Island RC	**Chain Of Custody:**	514362
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Staten Island, NY	**Date Submitted:**	11/2/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/8/2012 **Report Date:** 11/9/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Non-Responsive

Analy

Technical Manager: Non-Responsive

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4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514362

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH OM Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Staten Island RC
2. Job Location: Staten Island, NY
3. Job #: 104-15 W912K6-09-A-0003
4. Contact Perso [redacted] @ phone #
5. Submitted by [redacted] ture:

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: [redacted] horusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/9/12 ☐ Results Required By Noon	☒ Fax: [redacted] us.army.mil
		☒ Verba [redacted] us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 160.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
TEM Water samples °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis

☒ Pb Paint Chip 1 (QTY)
☒ *Pb Dust Wipe (wipe type: Ghost) 26 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL (L) / Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER/ OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
SIRC-ASB-1	Molded elbow	10-25-12				X				X						Date/Time: Contact: By:
SIRC-PC-1	White paint	↓					X			X						
X	SEE ATTACHED FIELD DATA SHEETS	X					X				X					
SIRC-LW-1 → SIRC-LW-26																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11/2/12 @ Via: FedEx By (Print): [redacted]
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 1459 9051 9695

Surface Sampling Field Data Sheet

Date Collected: 10-25-12
Job Name: Staten Island RC
Company: Bonus Environmental, LLC
Job Number: 1061-15
Job Location: 321 Manor Rd
Phone Number: 989-779-7686
Contact Pers: Non-Responsive
Address: Staten Island, NY
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
SIRC-LW-1	Field Blank	—	—	Ghost wipe
-2	Drill Hall	Floor, east end	4"x4"	
-3		Floor, west end		
-4		West wall, top of AED case		
-5		South wall, top of fire hose housing		
-6	↓	NE corner, top of circuit breaker box		
-7	Kitchen	East wall, top of paper towel dispenser		
-8	Former Indoor Firing Range	Floor, east end		
-9		Floor, west end		
-10	↓	light fixture, center of room		
-11	Boiler Rm	on slop sink		
-12	Rm 35	SW corner, on storage shelf		
-13	Rm 33	NE corner, on window sill	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 10-25-12
Job Number: 1061-15
Contact Person: Non-Responsive

Job Name: Staten Island RC
Job Location: 321 Manor Rd
Address: Staten Island, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
SIRC-LW-14	Rm 31	On South wall thermostat	4"x4"	Ghost wipe
-15	Rm 42A	SW corner, top of piano		
-16	Rm 60	Center of conf table		
-17	Rm 4	East wall, top of desk shelf		
-18	Rm 20	East wall, top of paper towel dispenser		
-19	Rm 9	SE corner, top of desk shelf		
-20	Rm 16	SE corner, top of File cabinet		
-21	MESS Hall	North end, on heat register		
-22	Rm 65	South end, window sill		
-23	Rm 96	West wall, on heat register		
-24	Rm 88	SE corner, top of File cabinet		
-25	Rm 90 F	Center of Rm, top of furnace		
-26	Rm 90 D	North end, top of thermostat box	↓	↓

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AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Asbestos Bulk Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP® 101143-0

Client:	National Guard Bureau	Job Name:	Staten Island RC	Chain Of Custody:	514362
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Staten Island, NY	Date Analyzed:	11/7/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	[redacted]
		P.O. Number:	W912K6-09-A-0003		
Attention:	[redacted]				

Page 1 of 1

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13010561	SI-Asb-1	NAD	–	–	–	–	30	–	–	–	–	70	MUD	Gray	Homogeneous	LBP	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35CV=0.23

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director Peeravut Chaikoenee Analyst(s) [redacted]

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples. This report must not be used to claim, and does not imply product certification, approval, or endorsement by NVLAP or any agency of the Federal Government.

NVLAP (101143-0) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514362

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Staten Island RC
2. Job Location: Staten Island, NY
3. Job #: 1061-15 P.O. #: W912K6-09-A-0003
4. Contact Person [redacted] @ phone #
5. Submitted by: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day [redacted]

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due: ☐ 24 Hours Time Due: Comments:	☐ Immediate ☐ Next Day ☐ 2 Day ☐ 3 Day ☒ 5 Day+ Date Due: 11/9/12 ☐ Results Required By Noon	☒ Include [redacted] Report ☒ Email: [redacted] ronusenvironmental.com ☒ Fax: [redacted] s.army.mil ☒ Verbal [redacted] s.army.mil

Asbestos Analysis
*PCM Air - Please Indicate Filter Type:
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)
TEM Air* - Please Indicate Filter Type:
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.4 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM ___ (Qual) PLM ___ (Quant) PLM/TEM ___ (Qual) PLM/TEM ___ (Quant)
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)
TEM Dust*
☐ Qual. (presence) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area) Dust D6480-99 ____ (QTY)
TEM Water
☐ Qual (presence) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)
☒ All samples received in good condition unless otherwise noted
☒ TEM Water samples ____ °C
If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 1 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 26 (QTY)
☐ *Pb Air ____ (QTY)
☐ Pb Soil/Solid ____ (QTY)
☐ Pb TCLP ____ (QTY)
☐ Drinking Water ☐ Pb ___ (QTY) ☐ Cu ___ (QTY) ☐ As ___ (QTY)
☐ Waste Water ☐ Pb ___ (QTY) ☐ Cu ___ (QTY) ☐ As ___ (QTY)
☐ Pb Furnace (Media ____) ____ (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Sampler:
Collection Media
☐ *Spore-Trap ___ (QTY) ☐ Surface Vacuum Dust ___ (QTY)
☐ *Surface Swab ___ (QTY) ☐ Culturable ID Genus (Media ___) ___ (QTY)
☐ *Surface Tape ___ (QTY) ☐ Culturable ID Species (Media ___) ___ (QTY)
☐ Other (Specify ___) ___ (QTY)

CLIENT ID #	SAMPLE LOCATION/ID	DATE/TIME	VOL (L)/Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER/ASH/OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
SIRC-ASB-1	Mottled floor	10-25-12				X				X						Date/Time: Contact: By:
SIRC-PC-1	White Paint	↓					X			X						
X SEE ATTACHED FIELD DATA SHEETS		X					X				X					
SIRC-LW-1 → SIRC-LW-26																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 11/2/12 @ ____ Via: FedEx By: [redacted]
2. Date/Time Analyzed: 11/9/12 @ KEP ____ 2pm
3. Results Reported [redacted] Date: 11/9/12 Time: ____ Initials: LBP
4. Comments: [illegible]

Bulk Sampling Survey Sheet

Page 1 of 1

Date Collected: 10-25-12 | Job Name: Staten Island RC | Company: Bevis Environmental, LLC

Job Number: 1061-15 | Job Location: 321 Manor Rd | Phone Number: 980-779-7181

Contact Pers[redacted]ddress: Staten Island, NY | Collected By [redacted]

COC Number: ______

Sample Number	Homogeneous Area ID	Type of Material	Sample Location	Friable	Condition of Material	Accessibility	Photo	Comments
SIRC-ASB-1	TSI	mudded elbow	Drill Hall, SE corner	☒ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☒ Low ☐ Medium ☐ High	☒ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706 (800) 346-0961/(301) 459-2640 Fax, www.amalab.com info@amalab.com

Appendix D

Photographs

Building exterior, west side

Room 35A, flammables cabinet

Room 31, Gym

Room 75, Boiler room

Room 75, Boiler room, fungal growth on FG pipe insulation

Room 58, restroom, water-damaged ceiling

Drill Hall, looking SE

Room 26, electrical room, peeling white paint

Drill Hall, SE corner, damaged PACM (TSI)

Appendix E

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MAY 07 2007

MCHB-TS-OFS

MEMORANDUM FOR National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 301-IH Old Bay Lane, Havre de Grace, MD 21078

SUBJECT: Industrial Hygiene Field Services Report No. 55-ML-048L-05/07, Industrial Hygiene Baseline Survey, Syracuse Armory, New York State Armory, 14 September 2005

1. Enclosed is a copy of subject report with two CD-ROMS.

2. Our point of contact is Mr. Non-Responsive, at commercial (410) 436-3118, DSN 584-3118 or electronic mail: Non-Responsive@us.army.mil

FOR THE COMMANDER:

Non-Responsive

Director, Occupational Health Sciences

Encl

CF: (wo/CD-ROMs)
USACHPPM-NORTH (MCHB-AN-IH/MR. Non-Responsive)

U.S. Army Center for Health Promotion and Preventive Medicine

INDUSTRIAL HYGIENE FIELD SERVICES
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMORY NATIONAL GUARD FACILITIES
SYRACUSE ARMORY, SYRACUSE, NY
14 SEPTEMBER 2005

Distribution limited to U.S. Government agencies only. Requests for this document must be referred to the National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive Non-Responsive 301-IH Old Bay Lane, Havre de Grace, MD 21078

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

USCHPPM

Readiness Thru Health

DESTRUCTION NOTICE - Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE FIELD SERVICES
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
SYRACUSE ARMORY, SYRACUSE, NY
14 SEPTEMBER 2005

1. PURPOSE. Conduct an industrial hygiene survey of the New York Army National Guard (NYARNG) Syracuse Armory, Syracuse, NY, to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve to establish a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

2. CONCLUSIONS. Very high levels of lead in surface dust in the former Indoor Firing Range (IFR) indicated that abatement was inadequate. Dust could be tracked from this room to other areas of the Armory. There were no other significant occupational safety and health concerns.

3. RECOMMENDATIONS.

a. Lead Exposure. Health Risk Assessment Code (RAC) 3 for children. Health RAC 4 for adults. Address all potential lead hazards before continuing to extend the use of this facility to children. Follow the guidance in NG Pamphlet 420-15 and in Appendix F of this report. If children will visit this facility, clean the floors in the Drill Hall near to, and rooms adjacent to, the Storage Room (converted IFR) to the Environmental Protection Agency (EPA) lead in dust standards for young children. The Storage Room should be cleaned to the EPA lead in dust standards for young children if the area is to be used to store toys or equipment used by children. At minimum, clean floors and other frequently contacted surfaces to the US Army Center for Health Promotion and Preventive Medicine recommended level. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005

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INDUSTRIAL HYGIENE FIELD SERVICES
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
SYRACUSE ARMORY, SYRACUSE, NY
14 SEPTEMBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE. Conduct an industrial hygiene survey of the New York Army National Guard (NYARNG) Syracuse Armory to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve as a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Fax, National Guard Bureau (NGB) Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), June 2005, subject: SAB.

4. GENERAL.

a. Personnel Contacted. The point of contact (POC) was Mr. Non-Responsive, Armory Regional Manager, 6900 Thompson Road, Syracuse, NY, Phone: (315) 438-3304.

b. Survey Personnel. This survey was conducted on 14 September 2005 by Mr. Non-Responsive, Industrial Hygienist, US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

c. Risk Assessment Codes (RACs). The Department of Defense Instruction (DODI) 6055.1 provides a method for assigning RACs to health hazards that are based on the magnitude of exposures to physical, chemical, and biological agents and the possible medical effects. The DODI 6055.1 also provides RACs for safety and ergonomic hazards. A RAC is an expression of the risk associated with a hazard that combines the hazard severity and accident probability into a single numeral. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

d. Background. The Armory mission was to support the 108th Infantry, 1st Brigade (L1), Company D; 127th Infantry, 1st Brigade, Company D; and 204th Engineering Brigade, Detachment 1, Company B. The construction date of the original facility was 1992. An

addition was completed in 2002. Both sections of the Armory were primarily office and classroom space used by the Brigades. The Drill Hall and former indoor firing range (IFR) were part of the original 1992 facility. Children had used the Drill Hall, Office and Classrooms during occasional visits. It was not expected that the facility would be used for day care or after school functions.

5. METHODOLOGY.

a. Assessment Criteria. Army Regulation 40-5 contains the requirement that airborne chemical exposures in Army facilities must comply with the lower of the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) or the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value®. The NGB criterion for lead in surface dust is discussed in Appendix C. The ACGIH provides criteria for industrial ventilation systems. The American Society of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE) publishes criteria for indoor air quality (IAQ). The National Fire Protection Association National Fire Codes provides standards for fire and life safety. The Illumination Engineering Society – North America (IESNA) provides standards for minimum light levels.

b. Calibration. All instruments were calibrated in accordance with manufacturers' instructions using National Institute of Standards and Testing-traceable method.

c. Methodology. The survey consisted of the collection of IAQ and ventilation measurements, sampling surface dust and air for lead, observation of work practices and procedures, and employee interviews.

6. FINDINGS AND DISCUSSION

a. Description of Operations. The Armory contained a Drill Hall, Classroom Offices, and storage space.

b. Occupational Safety and Health Programs. Hazard awareness training programs covered occupational heath topics including lead and asbestos hazards, noise, personal protective equipment, Hazard Communication, OSHA right-to-know requirements, lockout/tagout, and other topics required for State employees. Employee training records were up to date and located onsite.

c. Building Condition.

(1) Physical Condition. The wall surfaces were freshly painted and the building was in very good condition.

(2) Housekeeping. No housekeeping deficiencies were observed.

d. Indoor Environmental Quality.

(1) Heating, Ventilation, and Air-Conditioning Systems. The building had separate air handling systems for the two main areas. The air handling systems for the original office building and the new addition provided central heating and cooling. The Drill Hall was supplied with conditioned air through ceiling mounted ducts. The Storage Room (former IFR) was not supported by the building's air handling systems. It was ventilated by an exhaust fan located on its roof.

(2) Temperature, Humidity, and Air Exchange Rate. Temperature in degrees Fahrenheit (° F), Relative Humidity (RH) in percent, carbon dioxide (CO_2) in parts per million (ppm), and carbon monoxide (CO) in ppm were sampled to assess building indoor environmental air quality. The ASHRAE recommends maintaining 71-81º F in the summer, CO_2 levels below the value of 700 ppm plus the outdoor ambient level (approximately 380 ppm), and 30-60 percent RH. Temperatures averaged 71º F, RH levels averaged 48 percent, and CO_2 levels averaged 580 ppm. All values met ASHRAE recommendations.

(3) Mold. No mold or moisture problems were observed or reported by building occupants.

e. Water Quality. No water quality problems/concerns were reported.

f. Lead Hazards. The IFR had been closed since 1993. The POC stated that a lead abatement project was completed in 2001, along with the removal of the bullet trap and firing line fixtures and documentation was located at the Latham Armory, Latham, NY. The IFR was converted to a Storage Room for Brigade company equipment. No signs of deteriorating paint were observed. The date of construction indicates that leaded paint was unlikely to have been used.

(1) Lead Criteria.

(a) Lead in surface dust. The Environmental Protection Agency (EPA) limits for lead in dust are 40 micrograms per square foot (µg/ft^2) on floors, 250 µg/ft^2 on windowsills, and 400 µg/ft^2 in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North Industrial Hygiene Office concurs with the USACHPPM recommended maximum level of 200 µg/ft^2 on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA/State standards. This level was adopted from OSHA Compliance Letter 02-02-58. Further information is provided in Appendix C.

(b) Lead in air. The Army has adopted the 8-hour OSHA PEL of 50 micrograms per cubic meter (µg/m^3).

(2) Lead Results.

(a) Lead in Dust. Sampling locations and analytical results are shown in the Table. Sample results greater than 40 µg/ft² for floors or 200 µg/ft² for other surfaces are highlighted. There were very high levels of lead in the Storage Room (former IFR), indicating that it had been inadequately abated. Personnel working in this room were exposed to lead and were tracking lead out of the range area and redistributing it into adjacent rooms in the Armory. Six results exceeded the EPA and the State of New York standard for children of 40 µg/ft² on floors. These levels could be hazardous to children visiting the Armory.

TABLE. Lead in Surface Dust Sampling Locations and Analytical Results.

Wipe Sample Number	Location of Samples	Result (µg/ft²)
SYW01	Converted IFR bullet trap area, floor at right corner	4,200
SYW02	Converted IFR, floor at west wall halfway down range	3,600
SYW03	Converted IFR, exhaust grille in bullet trap area	100,000
SYW04	Converted IFR, top of light fixture	190
SYW05	Converted IFR, floor near firing line behind exit door	1,600
SYW06	Field blank	<0.3
SYW07	Room 152 floor behind door	58
SYW08	Drill Hall floor at east wall outside converted IFR	19
SYW09	Drill Hall, top of vending machine on west wall	41
SYW10	Converted IFR floor at entrance from Drill Hall	130
SYW11	Drill Hall floor at south wall near door to Supply Room	110
SYW12	Field blank	0.85

(b) Lead in Air. General area sampling was conducted in the Storage Room (former IFR) used for storage of Brigade equipment, and in the Drill Hall. The results were less than 4 micrograms per cubic meter (µg/m³), and were below the laboratory analytical reporting limit of 1 µg/sample, as well as the OSHA standard of 50 µg/m³ over an 8-hour day.

g. Other Chemical Hazards.

(1) Asbestos. The POC stated that the building was constructed without asbestos-containing building materials (ACBM). The date of the building indicated that ACBM was unlikely to have been used.

(2) CO. The Army has adopted the ACGIH 8-hour exposure limit for CO of 25 ppm. The CO levels measured in conjunction with IAQ parameters were all less than 0.1 ppm.

h. Industrial Ventilation Systems. There were no longer any operating industrial ventilation systems in the Armory.

i. Noise Hazards. There appeared to be no operations within the facility that would generate hazardous noise levels above the Army-adopted occupational exposure limits of 85 decibels A-weighted (dBA) with 3 db exchange rate.

j. Lighting. There were no complaints concerning lighting. The measured level in the State Office for the Armory on the first floor was 94 foot candles (fc); the Classroom, first floor, was measured at 90 fc, and the second floor hallway of the new addition was 76 fc. These values fall above the IESNA recommended minimum of 50 fc for medium visual tasks such as office work and reading.

k. Other issues. No other problems were observed or reported.

7. CONCLUSIONS. Very high levels of lead in surface dust in the former IFR indicated that abatement was inadequate. Dust could be tracked from this room to other areas of the Armory. There were no other significant occupational safety and health concerns.

8. RECOMMENDATIONS. Lead Exposure. Health RAC 3 for children. Health RAC 4 for adults. Address all potential lead hazards before continuing to extend the use of this facility to children. Follow the guidance in NG Pamphlet 420-15 and in Appendix F. If children will visit this facility, clean the floors in the Drill Hall near to, and rooms adjacent to, the Storage Room (converted IFR) to the EPA lead in dust standards for young children. The Storage Room should be cleaned to the EPA lead in dust standards for young children if the area is to be used to store toys or equipment used by children. At minimum, clean floors and other frequently contacted surfaces to the USACHPPM recommended level. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005

9. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report, please contact the undersigned at commercial (410) 436-4938/3118, DSN 584-4938/3118 or electronic mail: Non-Responsive@us.army.mil

Non-Responsive
Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive
MAJ, MS
Program Manager
Industrial Hygiene Field Services Program

APPENDIX A

REFERENCES

1. Occupational Safety and Health Administration, Title 29, Code of Federal Regulations (CFR), Part 1910 for General Industry, 2005 revisions.
http://www.osha.gov/comp-links.html

2. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality.
http://www.ashrae.org

3. DA PAM 40-501, Medical Services, Hearing Conservation Program, 10 Dec 98.
http://www.usapaarmy.mil/pdffiles/p40-501.pdf

4. Illuminating Engineering Society of North America, ANSI/IESNA Standard RP-1-2004, Office Lighting.

5. Department of Health and Human Services National Toxicology Program (NTP) Substance Profiles, Report on Carcinogens, 11th Edition, Lead and Lead Compounds (CAS No. 7439-92-1) Feb 05.

6. U.S. Environmental Protection Agency (EPA), 40 CFR Part 745, Lead; Identification of Dangerous Levels of Lead; Final Rule, 5 Jan 01.

7. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, 19 Aug 98.
http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

8. NG Pam 420-15, Facilities Engineering, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

APPENDIX B

LABORATORY REPORTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0
NY ELAP 10920
AIHA 100470

Client:	National Guard Bureau	**Job Name:**	Syracuse NY	**Chain Of Custody:**	116954		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Submitted:**	9/23/2005		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	9/28/2005	**Report Date:**	28-Sep-05

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0567367	SY-W-01	Flame	Wipe	****	0.111	108.01	ug/ft²	4200	ug/ft²	
0567368	SY-W-02	Flame	Wipe	****	0.111	108.01	ug/ft²	3600	ug/ft²	
0567369	SY-W-03	Flame	Wipe	****	0.111	108.01	ug/ft²	100000	ug/ft²	
0567370	SY-W-04	Furnace	Wipe	****	0.111	67.51	ug/ft²	190	ug/ft²	
0567371	SY-W-05	Flame	Wipe	****	0.111	108.01	ug/ft²	1600	ug/ft²	
0567372	SY-W-06	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Analys Non-Responsive **chnical Manager:** Non-Responsive

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0
NY ELAP 10920
AIHA 100470

Client:	National Guard Bureau	**Job Name:**	Syracuse NY	**Chain Of Custody:**	116955
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Submitted:**	9/23/2005
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive [redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	9/28/2005
Attention:	Non-Responsive			**Report Date:**	28-Sep-05

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0567373	SY-W-07	Furnace	Wipe	****	0.111	13.50	ug/ft²	58	ug/ft²	
0567374	SY-W-08	Furnace	Wipe	****	0.111	2.70	ug/ft²	19	ug/ft²	
0567375	SY-W-09	Furnace	Wipe	****	0.111	13.50	ug/ft²	41	ug/ft²	
0567376	SY-W-10	Furnace	Wipe	****	0.111	67.51	ug/ft²	130	ug/ft²	
0567377	SY-W-11	Furnace	Wipe	****	0.111	67.51	ug/ft²	110	ug/ft²	
0567378	SY-W-12	Furnace	Wipe Blank	****	N/A	0.30	ug	0.85	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Analyst: Non-Responsive [redacted]

Technical Manager: Non-Responsive [redacted]

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	**Job Name:**	Syracuse NY	**Chain Of Custody:**	144152
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Submitted:**	9/23/2005
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	Not Provided	**Date Analyzed:**	9/23/2005
Attention:	Non-Responsive			**Report Date:**	23-Sep-05

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result			Comments
0567379	SY-A-01	Flame	Air	1044	N/A	2.87	ug/m³	<	2.9	ug/m³	
0567380	SY-A-02	Flame	Air	1068	N/A	2.81	ug/m³	<	2.8	ug/m³	
0567381	SY-A-03	Flame	Air	1018	N/A	2.95	ug/m³	<	2.9	ug/m³	
0567382	SY-A-04	Flame	Air	1044	N/A	2.87	ug/m³	<	2.9	ug/m³	
0567383	SY-A-05	Flame	Air Blank	0	N/A	3.00	ug/m³	<	3	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

An: Non-Responsive

Technical Manager Non-Responsive

APPENDIX C

SUBJECT: National Guard Bureau Region North Industrial Hygiene Office Proposed Recommendations for Surface Lead in Armories

1. In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 µg/ft². This guidance is based on professional judgment, risk assessments, adaptation of OSHA guidance, and feasibility of cleaning to a certain level.

a. EPA standards (40 CFR 745.227(e) (8) (viii)) and State of New York standards are not directly applicable because they are developed for floors (40 µg/ft²), windowsills (250 µg/ft²) and window troughs (400 µg/ft²) in residential and childcare facilities. Most of the wipe samples in armories were collected in undisturbed areas and, therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The OSHA lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead. In workplaces where lead is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA cites a level of 200 µg/ft² in OSHA Instruction CPL 2-2.58 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, USACHPPM has determined that 200 µg/ft² is a safe surface contamination level for adult exposures. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels higher than those recommended above do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All States will receive this guidance when it is completed.

3. Ambient air samples collected in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 50 µg/m³ averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead in this building.

APPENDIX D

PHOTOGRAPHS

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005

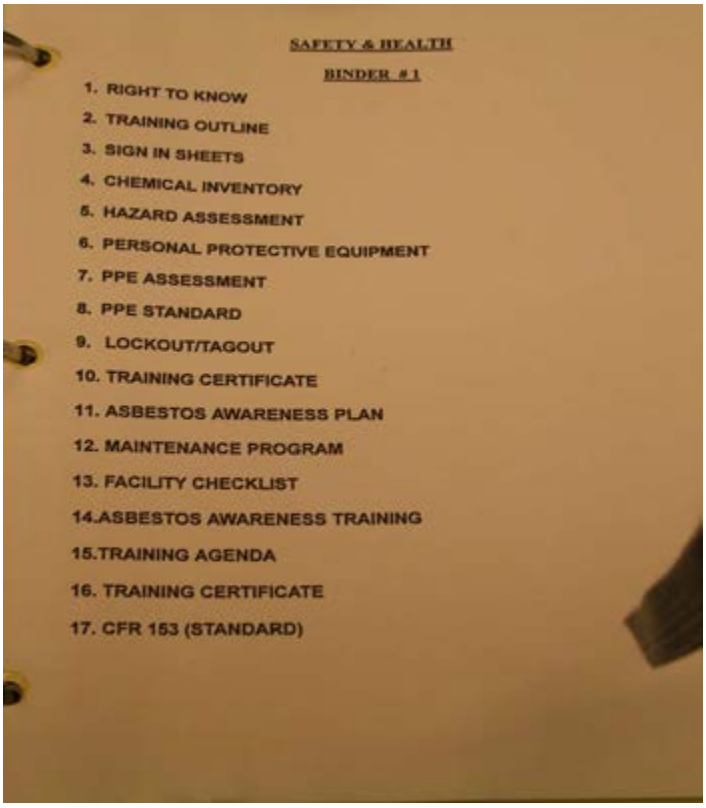
View of the Armory

Rear of the Armory. The forklift is at the overhead door of the Drill Hall.

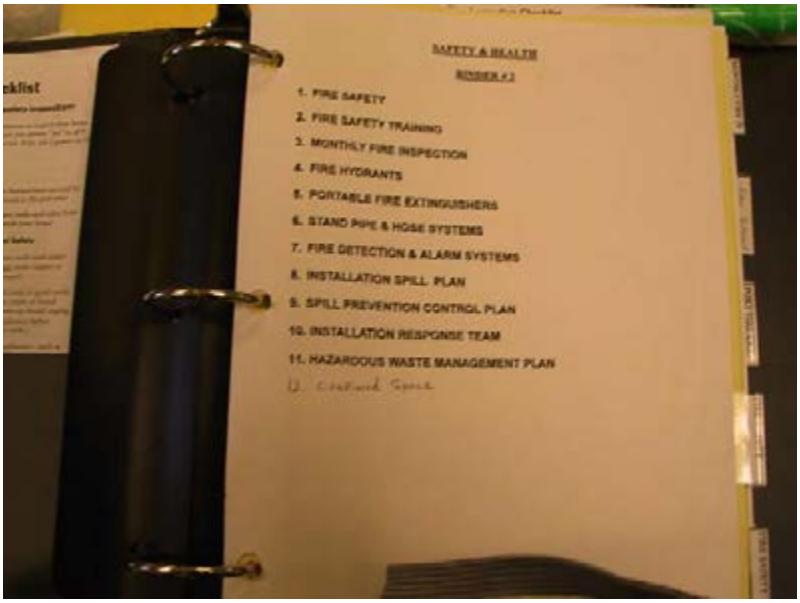
NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005

Drill Hall facing west wall.

Former IFR facing north towards the bullet trap area.



The Armory's required annual safety and health training topics (Binder 1).



The Armory's required annual safety and health training topics (Binder 2).

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005

SYW01. Former IFR, bullet trap area at east corner.

SYW02. Former IFR, west wall halfway down range.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005

SYW03. Former IFR, exhaust grille.

SYW04. Former IFR, sample taken from top of light fixture.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005

SYW05. Former IFR, near firing line behind exit door.

SYW07. Room 152, adjacent to former IFR.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005

SYW08. Drill Hall, entrance to IFR to the left and stairway to the right.

SYW09. Sample taken from top of vending machine at west wall of Drill Hall. Pump for air sampling can be seen on top of the vending machine. The filter was placed at breathing zone height on the opposite side facing the open Drill Hall area.

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SYW10. Entrance to IFR from Drill Hall. Sample collected behind door leading into IFR. Arrow shows location of the sample.

SYW11. Drill Hall, south wall at door to Supply Room.

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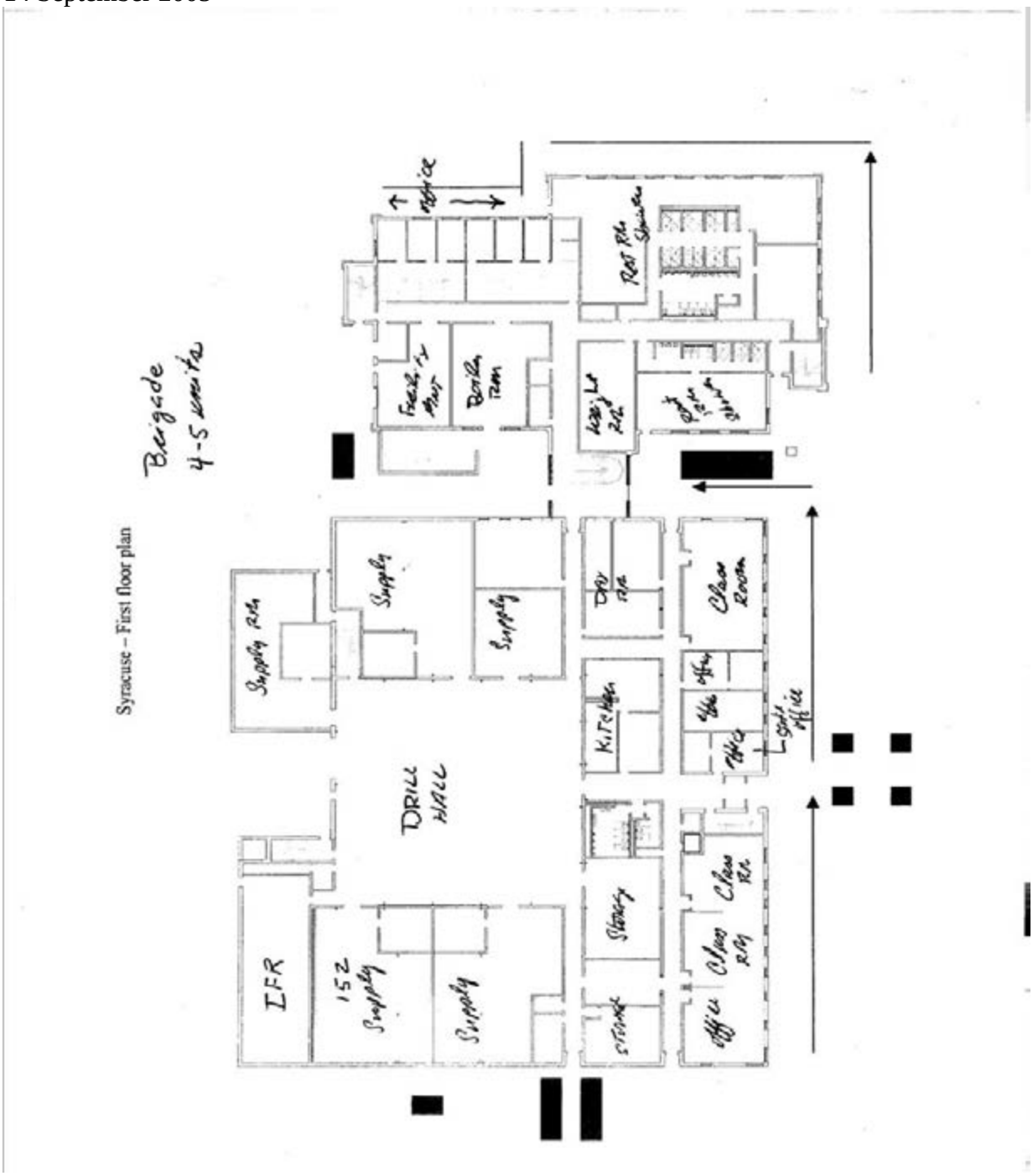
APPENDIX E

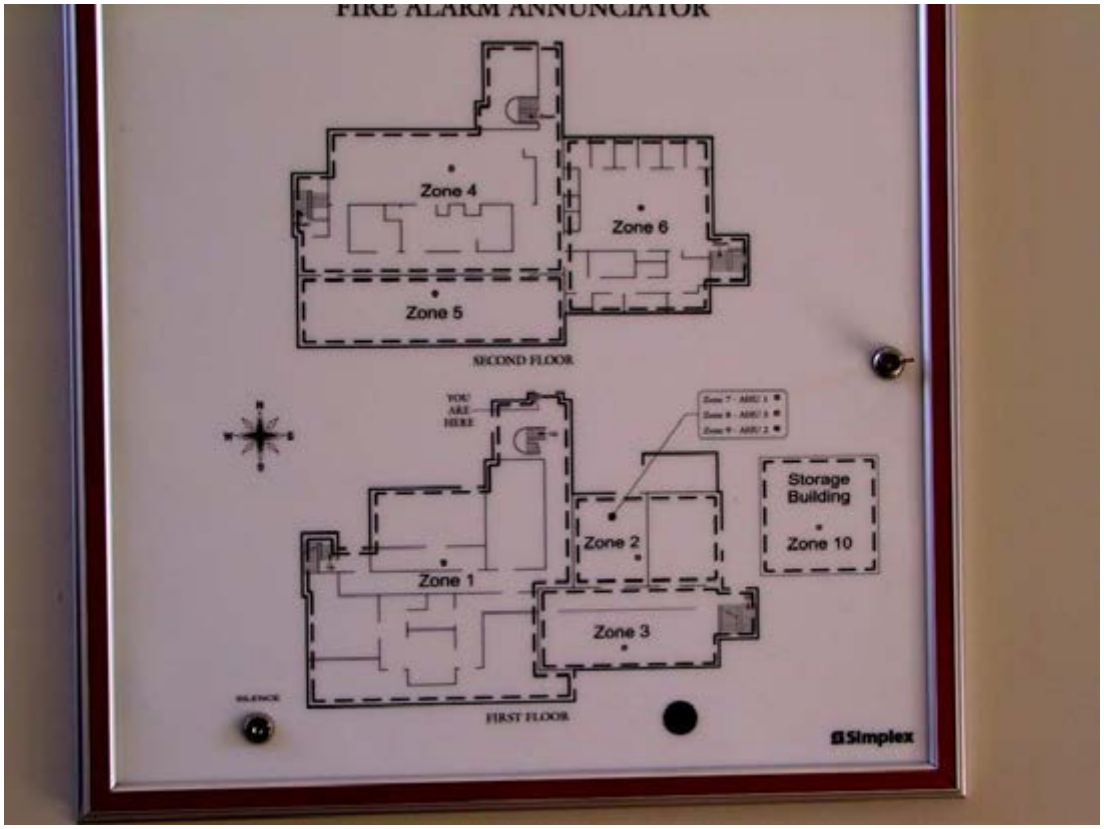
FLOOR PLAN

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005



The second floor of the original building, to the left, is similar to the first floor. The Drill Hall and the Firing Range extend up to roof level.

NYARNG IH Survey, Report No. 55-ML-048L-05/07, Syracuse Armory, Syracuse, NY, 14 September 2005



Floor plan for the 2002 addition to the Armory. No other schematics were available at the time of this survey.

APPENDIX F
LEAD CLEANING GUIDANCE

CHAPTER 14: CLEANING

Cleaning: How To Do It

1. Include step-by-step procedures for precleaning, cleaning during the job, and daily and final cleanings in project design or specifications.
2. Assign responsibilities to specific workers for cleaning and for maintaining cleaning equipment.
3. Have sufficient cleaning equipment and supplies *before* beginning work.
4. If contamination is extensive, conduct precleaning of the dwelling unit. Move or cover all furniture and other objects.
5. Conduct ongoing cleaning during the job, including regular removal of large and small debris and dust. Decontamination of all tools, equipment, and worker protection gear is required before it leaves containment areas. Electrical equipment should be wiped and high-efficiency particulate air (HEPA) vacuumed, not wetted down, to minimize electrocution hazards.
6. Schedule sufficient time (usually 30 minutes to an hour) for a complete daily cleaning, starting at the same time near the end of each workday after lead hazard control activity has ceased.
7. For final cleaning, wait at least 1 hour after active lead hazard control activity has ceased to let dust particles settle.
8. Use a vacuum cleaner equipped with a HEPA exhaust filter. HEPA vacuum all surfaces in the room (ceilings, walls, trim, and floors). Start with the ceiling and work down, moving toward the entry door. Completely clean each room before moving on.
9. Wash all surfaces with a lead-specific detergent, high-phosphate detergent, or other suitable cleaning agent to dislodge any ground-in contamination, then rinse. Change the cleaning solution after every room is cleaned.
10. Repeat step 8. To meet clearance standards consistently, a HEPA vacuum, wet wash, and HEPA vacuum cycle is recommended. For interim control projects involving dust removal only, the final HEPA vacuuming step is usually not needed (see Chapter 11). Other cleaning methods are acceptable, as long as clearance criteria are met and workers are not overexposed.
11. After final cleaning, perform a visual examination to ensure that all surfaces requiring lead hazard control have been addressed and all visible dust and debris have been removed. Record findings and correct any incomplete work. This visual examination should be performed by the owner or an owner's representative who is independent of the lead hazard control contractor.
12. If other construction work will disturb the lead-based paint surfaces, it should be completed at this point. If those surfaces are disturbed, repeat the final cleaning step after the other construction work has been completed.
13. Paint or otherwise seal treated surfaces and interior floors.
14. Conduct a clearance examination (see Chapter 15).
15. If clearance is not achieved, repeat the final cleaning.

16. Continue clearance testing and repeated cleaning until the dwelling achieves compliance with all clearance standards. As an incentive to conduct ongoing cleaning and a thorough final cleaning, the cost of repeated cleaning after failing to achieve clearance should be borne by the contractor as a matter of the job specification, not the owner.
17. Do not allow residents to enter the work area until cleaning is completed and clearance is established.
18. Cleaning equipment list:
    - HEPA vacuums.
    - Detergent.
    - Waterproof gloves.
    - Rags.
    - Sponges.
    - Mops.
    - Buckets.
    - HEPA vacuum attachments (crevice tools, beater bar for cleaning rugs).
    - 6-mil plastic bags.
    - Debris containers.
    - Waste water containers.
    - Shovels.
    - Rakes.
    - Water-misting sprayers.
    - 6-mil polyethylene sheeting (or equivalent).

Chapter 14: Cleaning

I. Introduction

This chapter describes cleaning procedures to be employed following abatement and interim control work. Dust removal as an interim control measure is covered in Chapter 11.

All lead hazard control activities can produce dangerous quantities of leaded dust. Unless this dust is properly removed, a dwelling unit will be more hazardous after the work is completed than it was originally. Once deposited, leaded dust is difficult to clean effectively. Whenever possible, ongoing and daily cleaning of leaded dust during lead hazard control projects is recommended. Ongoing and daily cleaning is also necessary to minimize worker exposures.

Cleaning is the process of removing visible debris *and* dust particles too small to be seen by the naked eye. Removal of lead-based paint hazards in a dwelling unit will not make the unit safe unless excessive levels of leaded dust are also removed. This is true regardless of whether the dust was present before or generated by the lead hazard control process itself. Improper cleaning can increase the cost of a project considerably because additional cleaning and clearance sampling will be necessary. However, cleaning and clearance can be achieved routinely if care and diligence are exercised.

A. Performance Standard

Although the cleaning methods described in this chapter are feasible and have been shown to be effective in meeting clearance standards, other methods may also be used if they are safe and effective. This performance-oriented approach should stimulate innovation, reduce cost, and ensure safe conditions for both residents and workers.

B. Small Dust Particles

Dust particles that are invisible to the naked eye remain on surfaces after ordinary cleaning procedures. A visibly clean surface may contain high and unacceptable levels of dust particles and require special cleaning procedures.

C. Difficulties in Cleaning

While cleaning is an integral and essential component of any lead hazard control activity, it is also the most likely part of the activity to fail.

Several common reasons for this failure include low clearance standards, worker inexperience, high dust-producing methods, and deadlines.

1. Low Clearance Standards

Because very small particles of leaded dust are easily absorbed by the body when ingested or inhaled, a small amount can create a health hazard for young children. Therefore, "clearance standards" are extremely low for acceptable levels of leaded dust particles on surfaces after hazard control activities, and careful cleaning procedures are required. Although it is not possible to remove *all* leaded dust from a dwelling, it is possible to reduce it to a safe level.

Clearance standards are described more fully in Chapter 15. The permissible amount of leaded dust remaining on each of the following surfaces following lead hazard work is as follows:

- 100 µg/ft^2 on floors.
- 500 µg/ft^2 on interior window sills (stools).
- 800 µg/ft^2 on window troughs (the area where the sash sits when closed).
- 800 µg/ft^2 on exterior concrete.

These levels are based on wipe sampling. Clearance testing determines whether the premises or area are clean enough to be reoccupied after the completion of a lead paint hazard control project. A cleaned area may not be reoccupied until compliance with clearance standards has been established. To prevent delays, final testing and final cleaning activities should be coordinated.

2. Worker Inexperience

To understand the level of cleanliness required to meet the established clearance standards for hazard control cleanup, new hazard control personnel often require a significant reorientation to cleaning. Many construction workers are used to cleaning up only dust that they can see, not the invisible dust particles that are also important to remove.

3. High Dust-Producing Methods and/or Inadequate Containment

High dust-generating methods, inadequate containment during hazard control work, and poor work practices can all make achievement of clearance particularly difficult. Work practices necessary to prevent spreading of dust throughout a dwelling (e.g., by tracking dust out of work areas) are essential but sometimes tedious. Essential work practices are sometimes mistakenly considered to be "flexible guidelines" rather than necessary standards that are designed to ensure that the job is completed, not only safely, but also on time and within budget.

4. Deadlines

Daily and final cleanings have sometimes been compromised due to project deadlines, since cleaning comes at the end of the job. Hurried efforts often result in clearance failure. Delayed and over-budget hazard control projects are often the result of repeated, unplanned recleanings that are necessitated by inadequate containment and sloppy work practices.

II. Coordination of Cleaning Activities

A. Checklist

The owner or contractor may use the following cleaning checklist before any lead hazard control activity:

- ✓ Is the critical importance of cleaning in a hazard control project understood?
- ✓ Have all workers been trained and certified for hazard control work?
- ✓ Have the precleaning, daily, and final cleanings been scheduled properly and coordinated with the other participants in the hazard control process?
- ✓ Have cleaning equipment and materials been obtained?
- ✓ Do the workers know how to operate and maintain special cleaning equipment, and do they have directions for the proper use of all cleaning materials?
- ✓ Have all workers carefully studied the step-by-step procedures for precleaning (if needed), in-progress cleaning, and daily and final cleanings?
- ✓ Are all workers properly protected during the cleaning processes (see Chapter9)?
- ✓ Have provisions been made to properly contain and store potentially hazardous debris (see Chapter 10)?
- ✓ Have dust-clearance testing and related visual inspections been arranged (see Chapter 15)?
- ✓ Are the clearance criteria to be met fully understood?
- ✓ Have all appropriate surfaces been properly painted or otherwise sealed?
- ✓ Have appropriate records been maintained that document participants' roles in the hazard control project?

B. Equipment Needed for Cleaning

The following equipment is needed to conduct cleaning: high-efficiency particulate air (HEPA) vacuums and attachments (crevice tools, beater bar for cleaning rugs), detergent, waterproof gloves, rags, sponges, mops, buckets, 6-mil plastic bags, debris containers, waste water containers, shovels, rakes, water-misting sprayers, and 6-mil polyethylene plastic sheeting (or equivalent).

C. Waste Disposal

Regulations governing hazardous and nonhazardous waste storage, transportation, and disposal affect both the daily and final cleaning procedures. The hazard control contractor and the disposal contractor should work together to establish formal written procedures, specifying selected containers, storage areas, and debris pickups, to ensure that all relevant regulations are met.

III. Cleaning Methods and Procedures

Many of the special cleaning methods and procedures detailed in this chapter are not standard operating procedure for general home improvement contractors. Therefore, project designers, responsible agencies, or owners must ensure that contractors follow the methods and procedures recommended herein or specially designed alternative procedures, even though some may appear to be redundant and unnecessary. These methods have been shown to be feasible and effective in many situations and skipping steps in the cleaning procedures can be counterproductive.

A. Containment

Because of the difficulty involved in the removal of fine dust, dust generated by hazard control work should be contained to the extent possible to the inside of work areas. Inadequately constructed or maintained containment or poor work practices will result in additional cleaning efforts, due to dust that has leaked out or been tracked out of the work area (see Chapter 8).

B. Basic Cleaning Methods: Wet Wash and Vacuum Cleaning Techniques

Because leaded dust adheres tenaciously, especially to such rough or porous materials as weathered or worn wood surfaces and masonry surfaces (particularly concrete), workers should be trained in cleaning methods. As a motivator, some contractors have awarded bonuses to workers who pass clearance the first time.

Two basic cleaning methods have proven effective, when used concurrently, in lead-based paint hazard control projects: a special vacuum cleaner equipped with a HEPA exhaust filter, followed by wet washing with special cleaning agents and rinsing, followed by a final pass with the HEPA vacuum.

Although HEPA filtered vacuums and trisodium phosphate (TSP) cleaners have been considered the standard cleaning tools for lead hazard control projects, new research, discussed under the "Alternatives Methods" section in this chapter, suggests that other tools and products may also be effective in efficiently cleaning dust while providing adequate worker protection from airborne exposure risks. Some of these innovations may even be superior.

1. HEPA Vacuuming

HEPA vacuums differ from conventional vacuums in that they contain high-efficiency filters that are capable of trapping extremely small, micron-sized particles. These filters can remove particles of 0.3 microns or greater from air at 99.97 percent efficiency or greater. (A micron is 1 millionth of a meter, or about 0.00004 inches.) Some vacuums are equipped with an ultra-low penetration air (ULPA) filter that is capable of filtering out particles of 0.13 microns or greater at 99.9995 percent efficiency. However, these ULPA filters are slightly more expensive, and may be less available than HEPA filters.

Vacuuming with conventional vacuum machines is unlikely to be effective, because much of the fine dust will be exhausted back into the environment where it can settle on surfaces. A recent Canadian study revealed that fine-dust air levels were exceedingly high when a standard portable vacuum with a new bag was used, although partially filled bags were found to be more efficient (CMHC, 1992). Considerations for the proper use of a HEPA vacuum are listed below.

Operating Instructions

There are a numerous manufacturers of HEPA vacuums. Although all HEPA vacuums operate on the same general principle, they may vary considerably with respect to specific procedures, such as how to change the filters. To ensure the proper use of equipment, the manufacturer's operating instructions should be carefully followed and if possible, training sessions arranged with the manufacturer's representative.

Although HEPA vacuums have the same "suction" capacity as ordinary vacuums that are comparably sized, their filters are more efficient. Improper cleaning or changing of HEPA filters may reduce the vacuum's suction capability.

Special Attachments

Because the HEPA vacuum will be used to vacuum surfaces other than floors, operators should buy attachments and appropriate tool kits for use on different surfaces—such as brushes of various sizes, crevice tools, and angular tools.

Selecting Appropriate Size(s)

HEPA vacuums are available in numerous sizes, ranging from a small lunchbucket-sized unit to track-mounted systems. Two criteria for size selection are the size of the job and the type of electrical power available. Manufacturer recommendations should be followed.

Wet-Dry HEPA Vacuums

Some hazard control contractors have found the wet-dry HEPA vacuums to be particularly effective in meeting clearance standards. These vacuums are equipped with a special shut-off float switch to protect the electrical motor from water contact.

Prefilters

HEPA filters are usually used in conjunction with a prefilter or series of prefilters that trap the bulk of the dust in the exhaust airstream, particularly the larger particles. The HEPA filter traps most of the remaining small particles that have passed through the prefilter(s). All filters must be maintained and replaced or cleaned as specified in the manufacturer's instructions. Failure to do so may cause a reduction in suction power (thus reducing the vacuum's efficiency and effectiveness). Failure to change prefilters may damage the vacuum motor and will also shorten the service life of the HEPA filter, which is far more expensive than the prefilters.

HEPA Vacuuming Procedures

Surfaces frequently vacuumed include ceilings, walls, floors, windows, interior and exterior sills, doors, heating, ventilation, and air conditioning (HVAC) equipment (heating diffusers, radiators, pipes, vents), fixtures of any kind (light, bathroom, kitchen), built-in cabinets, and appliances.

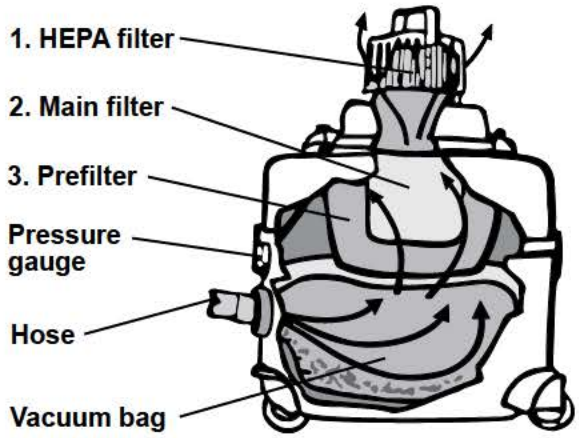
To aid in dislodging and collecting deep dust and lead from carpets, the HEPA vacuum must be equipped with a beater bar (agitator head) that is fixed to the cleaning head. This bar should be used on all passes on the carpet face during dry vacuuming (see Chapter 11 for details on carpet and furniture cleaning).

All rooms and surfaces should be included in the HEPA vacuum process, except for those that (1) were found not to have lead-paint hazards *and* were properly separated from work areas before the process began (see Chapter 8), or (2) were never entered during the process. Porches, sidewalks, driveways, and other exterior surfaces should be vacuumed if exterior hazard control work was conducted, or if debris was stored or dropped outside. Vacuuming should begin on the ceilings and end on the floors, sequenced to avoid passing through rooms already cleaned, with the dwellings' entryway cleaned last.

Emptying the HEPA Vacuum

Used filters and vacuumed debris are potentially hazardous waste and should be treated accordingly (see Chapter10). Therefore, operators should use extreme caution when opening the HEPA vacuum for filter replacement or debris removal to avoid accidental release of accumulated dust into the environment. This may occur, for example, if the vacuum's seal has been broken and the vacuum's bag is disturbed.

Figure 14.1a Vacuum With a HEPA Filter.



Parts of a HEPA-vacuum

Most HEPA-vacuums have three filters: HEPA filter, main filter, and prefilter. Debris gets sucked in through the hose into the vacuum bag. The air and dust get filtered through the prefilter, the main filter, and the HEPA filter. The HEPA filter captures the lead dust before the air is released into the work area again.

Operators should also wear a full set of protective clothing and equipment, including appropriate respirators, when performing this maintenance function, which should be done in the containment area or offsite.

2. Wet Detergent Wash

Several types of detergents have been used to remove leaded dust. Those with a high-phosphate content (containing at least 5 percent trisodium phosphate, also known as TSP) have been found to be effective when used as part of the final cleaning process (Milar, 1982). TSP detergents are thought to work by coating the surface of dusts with phosphate or polyphosphate groups which reduces electrostatic interactions with other surfaces and thereby permits easier removal. Because of environmental concerns some States have restricted the use of TSP, and some manufacturers have eliminated phosphates from their household detergents. However, high-TSP detergents can usually be found in hardware stores and may be permitted for limited use, such as lead hazard control.

Other non-TSP cleaning agents developed specifically for removing leaded dust have also been found to be effective (possibly more effective than TSP) in limited trials by several

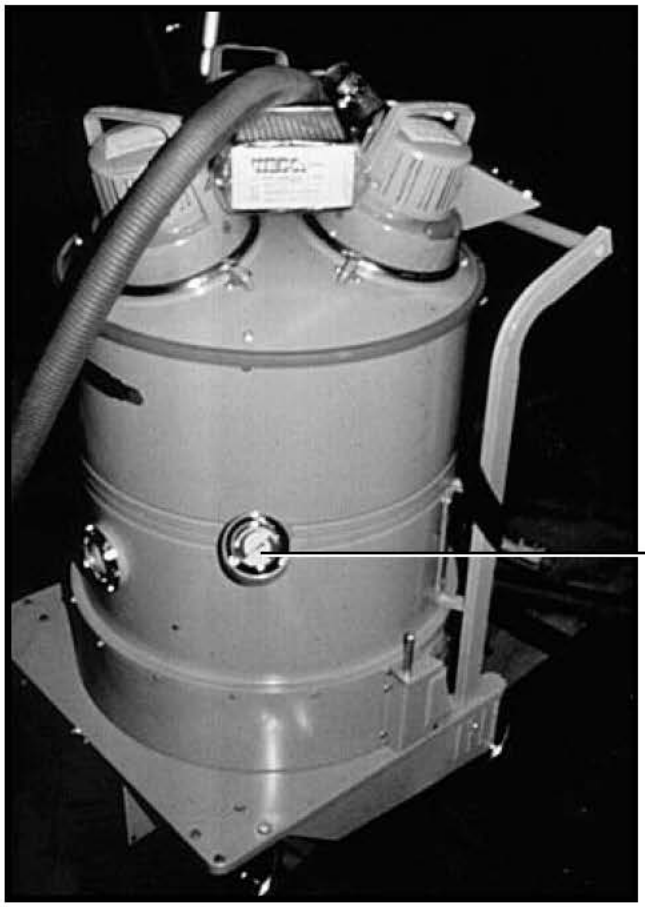
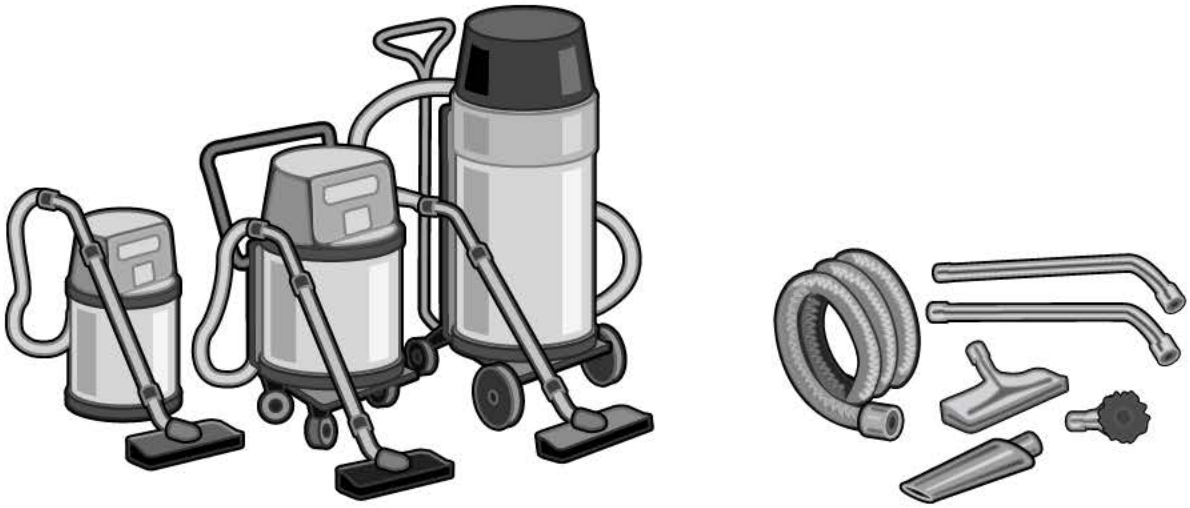


Figure 14.1b Pressure Gauge Indicator Shows When Filters Require Changing.

Figure 14.2 HEPA Vacuum Sizes and Tools.



investigators (Grawe, 1993; Wilson, 1993) and may also be safer, since TSP is a skin and eye irritant. See section VII for more information on non-TSP detergents. Proper procedures for using high-phosphate detergents also apply to most other types of detergents and include the following steps:

Manufacturer's Dilution Instructions

Users of cleaning agents for leaded dust removal should follow manufacturer's instructions for the proper use of a product, especially the recommended dilution ratio. Even diluted, trisodium phosphate is a skin irritant and users should wear waterproof gloves. Eye protection should also be worn, and portable eyewash facilities should be located in or very near the work area. Consult manufacturer's directions for the use of other detergents.

Appropriate Cleaning Equipment

Because a detergent may be used to clean leaded dust from a variety of surfaces, several types of application equipment are needed, including cleaning solution spray bottles, wringer buckets, mops, variously sized hand sponges, brushes, and rags. Using the proper equipment on each surface is essential to the quality of the wet-wash process.

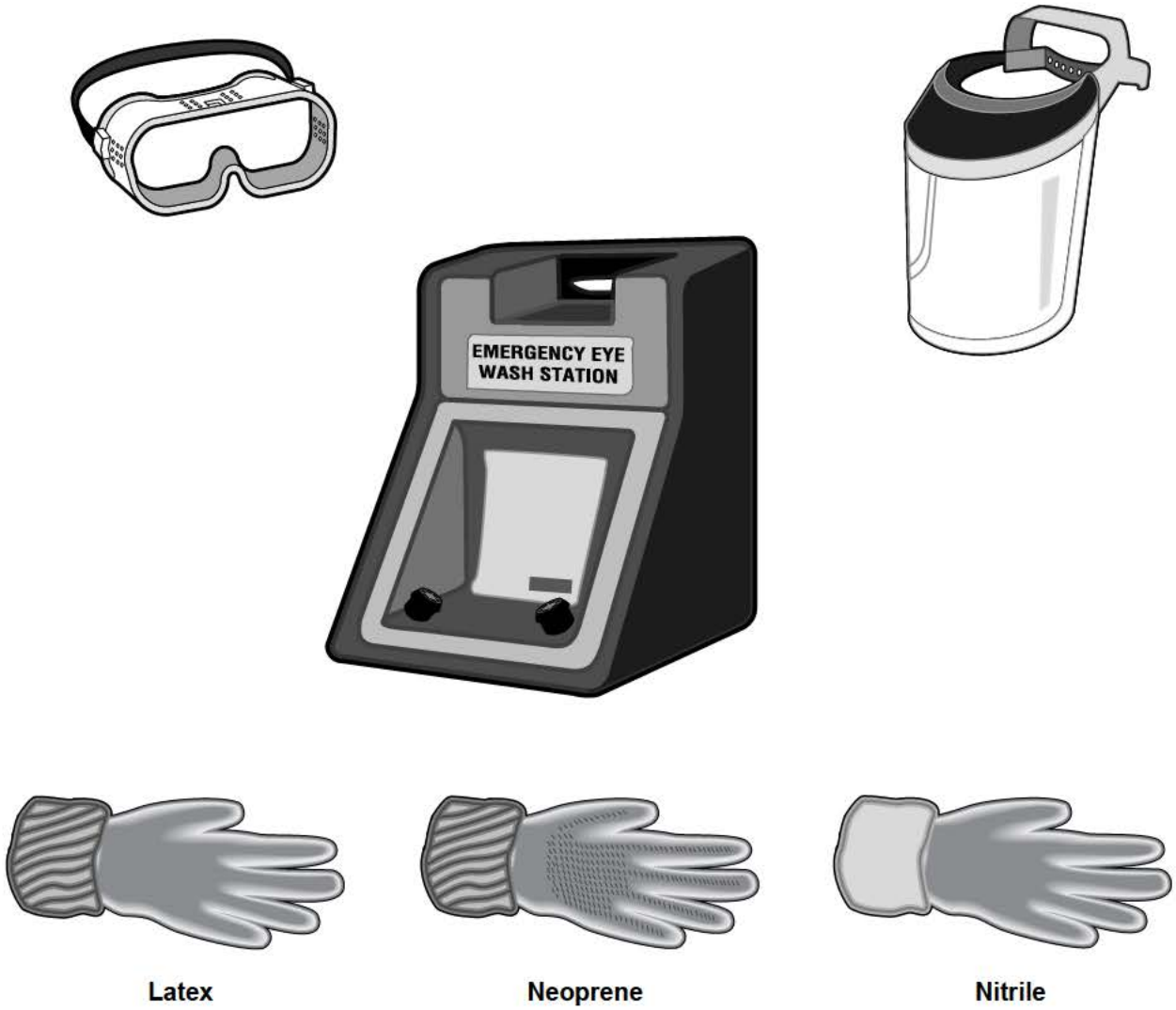
Proper Wet-Cleaning Procedures

At the conclusion of the active lead hazard control process and the initial HEPA vacuuming, all vacuumed surfaces should be thoroughly and completely washed with a high-phosphate solution or other lead-specific cleaning agent (or equivalent) and rinsed. Select a detergent that does not damage existing surface finishes (TSP may damage some finishes). Work should proceed from ceilings to floors and sequenced to avoid passing through rooms already cleaned.

Changing Cleaning Mixture

Many manufacturers of cleaners will indicate the surface area that their cleaning mixture will cover. To avoid recontaminating an area by cleaning it with dirty water, users should follow manufacturer-specified surface-area limits. However, regardless of manufacturers' recommendations, the cleaning mixture should be changed after its use for each room. As a rule of thumb, 5 gallons should be used to clean no

Figure 14.3 Goggles, Face Shields, Gloves, and Eye Wash Facilities Should Be Available When Used With Chemicals Such as TSP.



more than 1,000 square feet. Used cleaning mixture is potentially hazardous waste (see Chapter 10); consult with your local water and sewage utility for directions on its proper disposal. Wash water should never be poured onto the ground. The wash water is usually filtered and then poured down a toilet (if the local water authority approves).

3. The HEPA/Wet Wash/HEPA Cycle

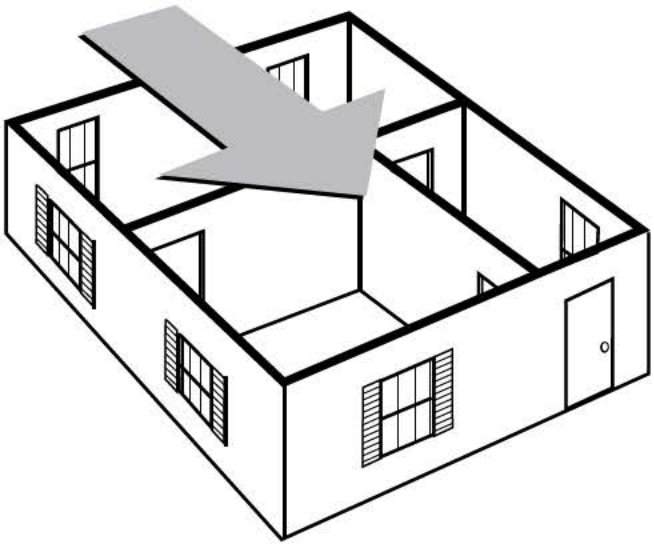
Typical Procedures

The usual cleaning cycle that follows lead hazard control activities is called the HEPA vacuum/wet wash/HEPA cycle and is applied to an entire affected area as follows:

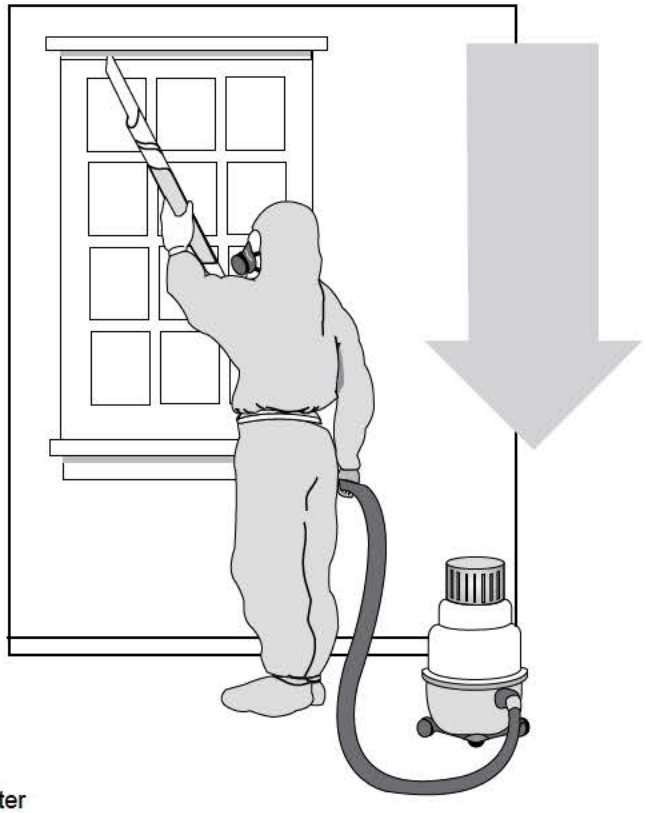
- First, the area is HEPA vacuumed.

Figure 14.4a The HEPA Vacuum, Wet Wash, HEPA Vacuum Cycle Helps in Meeting Clearance Standards.

HEPA vacuum all surfaces
Start at the end farthest from the main entrance/exit. As you vacuum, move towards the main exit and finish there.



Begin at the top of each room and work down. For example, start with the top shelves, the top of the woodwork, and so on, and work down to the floor. Do every inch of the windows, especially the window troughs.



Courtesy: Alice Hamilton Occupational Health Center

- Next, the area is washed down.
- After drying, the area is again HEPA vacuumed.

The rationale for this three-pass system is as follows:

- The first HEPA vacuum removes as much dust and remaining debris as possible.
- The wet wash further dislodges dust from surfaces.
- The final HEPA cycle removes any remaining particles dislodged but not removed by the wet wash.

Single-Pass Wet Wash/HEPA Vacuum

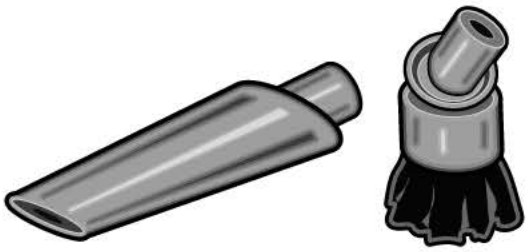
Some lead hazard control contractors have found HEPA spray cleaner vacuums to be a cost-effective alternative to the three-pass system. Similar to home carpet-cleaning machines, these vacuums simultaneously deliver a solution to the surface and recover the dirty solution. Theoretically, this process combines two of the steps in the HEPA vacuum/wet wash/HEPA cycle into one step. While anecdotal evidence indicates that the spray cleaner wet wash/HEPA is effective for some uses, limitations have been noted in its use for ceilings, vertical surfaces, and hard to reach areas. This device may be used as long as clearance standards are met.

Figure 14.4b (continued)

Use special attachments
Use the rubber cone where the floor meets the baseboard and along all the cracks in the floor boards. Use the brush tool for walls and woodwork.

Use the wheeled floor nozzle for bare floors and the carpet beater for rugs.

Move slowly
Vacuum slowly so the HEPA vacuum can pick up all the lead dust.



Rubber Cone **Dust Brush**

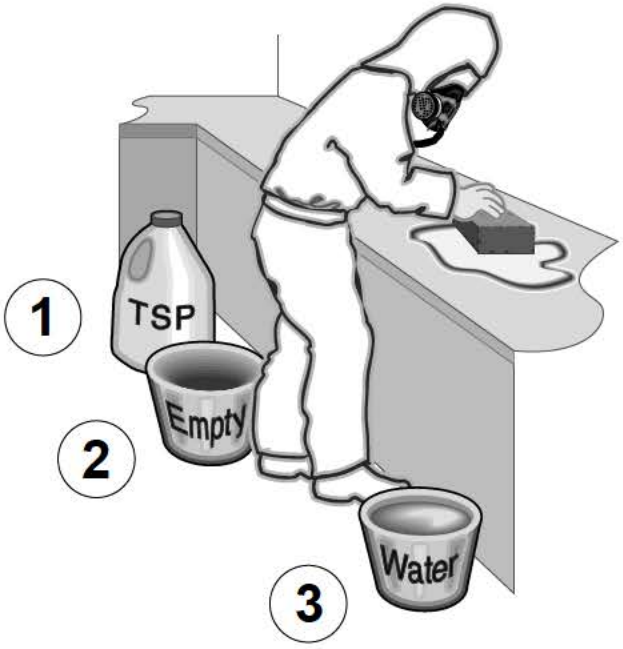
Powered Carpet Beater

Wheeled Floor Nozzle

Figure 14.4c (continued)

Wash all surfaces with suitable detergents

Wash *all surfaces* in the work area with suitable detergents, including areas that had been covered with plastic. Some wallpaper should only be HEPA vacuumed, since it may be damaged by the detergent.



Wipe All Surfaces

Wet Mop Floor

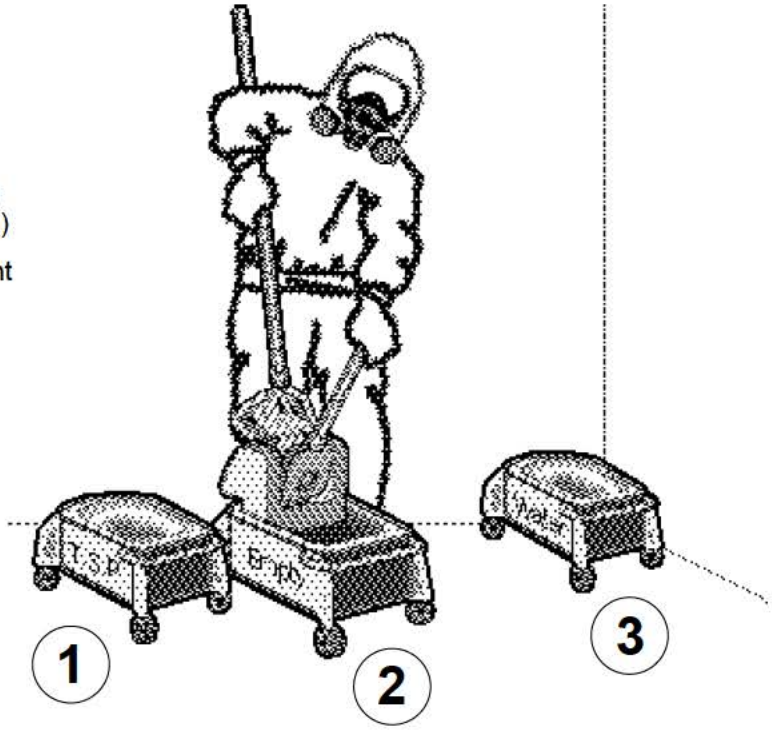
Don't Dry Sweep

Figure 14.4c (continued)

Use the 3-Bucket System.

To wash: Use string mops and mop buckets with wringers. (Some experts say NEVER use a sponge mop on the floor. Sponge mops may only push the lead around on the floor, not remove it.)

Dip the string mophead in the detergent wash in bucket #1. Mop the floor.



Squeeze out the mophead in empty bucket #2. Return to bucket #1 for more detergent solution and continue mopping. Repeat.

Use the third bucket for rinsing the floor.

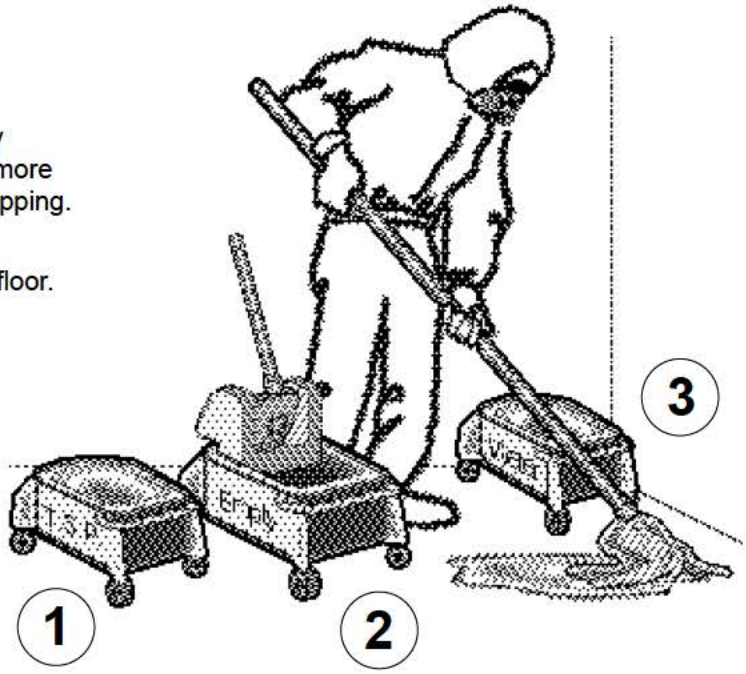
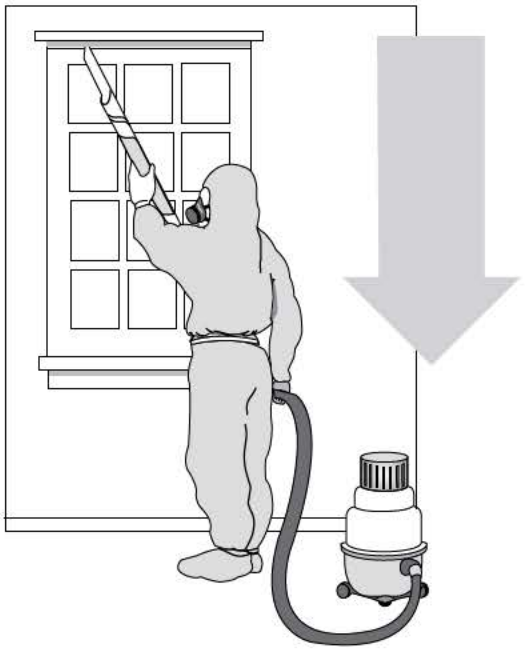


Figure 14.4d (continued)

HEPA vacuum all surfaces a final time
HEPA vacuum *all surfaces* in the work area, including areas that had been covered with plastic.

Starting at the far end, work towards the decontamination area. Begin with ceilings or the top of the walls and work down, cleaning the floors last. Do every inch of the windows, especially the troughs. Use the corner tool to clean where the floor meets the baseboard and all the cracks in the floor boards. Use the brush tool for the walls. Move slowly and carefully to get all the dust.



4. Sealing Floors

Before clearance, all floors without an intact, nonporous coating should be coated. Sealed surfaces are easier for residents to clean and maintain over time than those that are not sealed. Wooden floors should be sealed with a clear polyurethane or painted with deck enamel or durable paint. Vinyl tile, linoleum, and other similar floors should be sealed with an appropriate wax. Concrete floors should be sealed with a concrete sealer or other type of concrete deck enamel. However, if these floors are already covered by an effective coat of sealant, it may be possible to skip this step.

As an alternative to sealing, floors may be covered with new vinyl tile, sheet vinyl, linoleum flooring, or the equivalent to create a more permanent cleanable surface. New surfaces should be cleaned with a cleaning solution that is appropriate for that type of surface.

IV. Order of Cleaning Procedures During Lead Hazard Control

The special cleaning procedures to be followed during a lead-based paint hazard control project are discussed in chronological order below. Skipping steps in the process may result in failure to meet post-lead hazard control clearance standards.

A. Precleaning Procedures

Precleaning (i.e., cleaning conducted before lead hazard control is begun) is necessary only in dwelling units that are heavily contaminated with paint chips. Precleaning involves the removal of large debris and paint chips, followed by HEPA vacuuming. These steps may be followed by removal of occupant personal possessions, furniture, or carpeting, depending on the

Figure 14.5 Single-Pass HEPA Vacuum/Wet Wash Technology.

Worksite Preparation Level selected (see Chapter 8). If the furniture will not be cleaned, it should be removed from the area or covered with plastic prior to beginning the precleaning procedure. Carpeting should always be misted before its removal to control the generation of hazardous dust.

It is usually the resident's responsibility to remove most of his or her personal possessions. However, if necessary, owners or project management should be prepared to complete this activity before lead hazard control work begins. As a last resort, the contractor may pack any remaining belongings and carefully seal and move the boxes, supplying all necessary boxes, packing materials, and staff to complete the task. Following cleaning and clearance, the contractor should return all packed items to their appropriate places. Leaving these tasks to the contractor may be expensive and inefficient, since the contractor will need to be insured for this function if the occupant's

Figure 14.6 Precleaning Is Needed in Areas Where Contamination and Deterioration Are High.

belongings are damaged. Additionally, moving furniture, rugs, drapes, and other items owned by the occupant could increase leaded dust levels. Clearance should be conducted after cleaning but before resident items are moved back in.

B. Ongoing Cleaning During the Job

Periodic HEPA vacuuming during the lead hazard control work may be necessary to minimize tracking of dust and paint chips from one area to another (e.g., when a large amount of paint chips or dust is being generated).

C. Daily Cleaning Procedures

Cleaning activity should be scheduled at the end of each workday when all active lead hazard control throughout the dwelling has ceased. Sufficient time must be allowed for a thorough and complete cleaning (usually about 30 minutes to an hour). Daily cleaning helps achieve clearance dust levels by minimizing problems that may otherwise occur during final cleaning and limiting worker exposures. While daily cleaning can be skipped in vacant dwelling units, it is required when occupants will return in the evening. Under no circumstances should debris or plastic be left outside overnight in an unsecured area, even if the dwelling is vacant. Daily cleaning should consist of:

- Removing large debris.
- Removing small debris.
- HEPA vacuuming, wet clean, HEPA vacuuming (horizontal surfaces only).
- Cleaning exterior.
- Patching and repairing plastic sheeting.
- Securing debris/plastic.

Figure 14.7 Plastic Sheeting Should Be Repaired as Part of Daily Cleanup.

1. Large Debris

Large demolition-type debris (e.g., doors, windows, trim) should be wrapped in 6-mil plastic, sealed with tape, and moved to a secure area on the property designated for waste storage. All sharp corners, edges, and nails should be hammered down to prevent injury and minimize the tearing of plastic. It is not necessary to wrap each individual piece of debris in plastic if the entire load can be wrapped. A secure area either outside or inside the property must be designated as a temporary waste-storage area. Covered, secured, and labeled dumpsters placed on or near the property may be used. Proper segregation of waste should be enforced at this time (see Chapter 10).

2. Small Debris

After being misted with water, small debris should be swept up, collected, and disposed of properly. The swept debris should be placed in double 4-mil or single 6-mil polyethylene (or equivalent) plastic bags, properly sealed, and moved to the designated trash storage area. Trash bags should not be overloaded; overloaded bags may rupture or puncture during handling and transport.

3. Exterior Cleaning

Areas potentially affected by exterior lead hazard control should be protected via a containment system (see Chapter 8). Because weather can adversely affect the efficacy of exterior

containment, the surface plastic of the containment system should be removed at the end of each workday. On a daily basis, as well as during final cleaning, the immediate area should be examined visually to ensure that no debris has escaped containment. Any such debris should be raked or vacuumed and placed in single 6-mil or double 4-mil plastic bags, which should then be sealed and stored along with other contaminated debris. HEPA vacuuming is appropriate for hard exterior surfaces, not soil.

4. Worker Protection Measures

General worker protection measures are discussed in Chapter 9. Studies indicate that during daily cleaning activities, especially while wet sweeping, workers may be exposed to high levels of airborne dust. Therefore, workers should wear protective clothing and equipment, especially appropriate respirators.

5. Maintaining Containment

The integrity of the plastic sheeting used in a lead hazard control project must be maintained. During their daily cleaning activities, workers should monitor the sheeting and immediately repair any holes or rips with 6-mil plastic and duct tape.

V. Order of Final Cleaning Procedures After Lead Hazard Control

Before treated surfaces can be painted or sealed, final cleaning procedures must be completed. Because airborne dust requires time to settle, the final cleaning process should start no sooner than 1 hour after active lead hazard control has ceased in the room. See Appendix 11 for details regarding dust settling.

A. Final Cleaning

As the first stage in the final cleaning, floor plastic should be misted and swept as detailed earlier in this chapter. Upper-level plastic, such as that on cabinets and counters, should be removed first, after it has been misted with water *and cleaned*. All plastic should be folded carefully from the corners/ends to the middle to trap any remaining dust. Next, remove both layers of plastic from the floor.

Plastic sheets used to isolate contaminated rooms from noncontaminated rooms should remain in place until after the cleaning and removal of other plastic sheeting; these sheets may then be misted, cleaned, and removed last.

Removed plastic should be placed into double 4-mil or single 6-mil plastic bags, or plastic bags with equivalent (or better) performance characteristics, which are sealed and removed from the premises. As with daily cleanings, this plastic-removal process usually requires workers to use protective clothing and respirators.

After the plastic has been removed from the contaminated area, the entire area should be cleaned using the HEPA/wet wash/HEPA cycle, starting with the ceiling and working down to the floor. After surfaces are repainted or sealed, a final HEPA/wet wash/HEPA cycle may be necessary if accumulated dust caused by other work is visible.

1. Decontamination of Workers, Supplies, and Equipment

Decontamination is necessary to ensure that worker's families, other workers, and subsequent properties do not become contaminated. Specific procedures for proper decontamination of equipment, tools, and materials prior to their removal from lead hazard control containment areas should be implemented, as described below and in Chapters 9 and 10.

Work clothing, work shoes, and tools should not be placed in a worker's automobile unless they have been laundered or placed in sealed bags. All vacuums and tools that were used should be wiped down using sponges or rags with detergent solutions.

Consumable/disposable supplies, such as mop heads, sponges, and rags, should be replaced, after each dwelling is completed. Soiled items should be treated as contaminated debris (see Chapter 10).

Figure 14.8a Pick Up Corners of Plastic Sheeting.

Figure 14.8b Fold Plastic Inward.

Durable equipment, such as power and hand tools, generators, and vehicles, should be cleaned prior to their removal from the site; the cleaning should consist of a thorough HEPA vacuuming followed by washing.

B. Preliminary Visual Examination

After the preliminary final cleaning effort is completed, the certified supervisor should visually evaluate the entire work area to ensure that all work has been completed and all visible dust and debris have been removed. While the preliminary examination may be performed by the lead hazard control supervisor, contractor, or owner as a preparatory step before the final clearance examination, it does not replace the independent visual assessment conducted during clearance.

If the visual examination results are unsatisfactory, affected surfaces must be retreated and/or recleaned. Therefore, it is more cost effective to have the supervisor rather than the clearance examiner perform this initial examination.

C. Surface Painting or Sealing of Nonfloor Surfaces

The next step of the cleaning process is painting or otherwise sealing all treated surfaces except floors.

Surfaces, including walls, ceilings, and woodwork, should be coated with an appropriate primer and repainted. Surfaces enclosed with vinyl, aluminum coil stock, and other materials traditionally not repainted are exempt from the painting provision.

D. Final Inspection

The final clearance evaluation should take place at least 1 hour after the final cleaning. Clearance has three purposes: 1) to ensure that the lead hazard control work is complete, 2) to detect the presence of leaded dust, and 3) to make sure that all treated surfaces have been repainted or otherwise sealed. Clearance is usually performed after the sealant is applied to the floor. See Chapter 15 for information on clearance examination procedures.

E. Recleaning After Clearance Failure

If after passing the final visual examination, the dwelling unit fails the clearance wipe dust tests,

the HEPA/wet wash/HEPA cleaning cycle should be carefully and methodically repeated. Failure is an indication that the cleaning has not been successful. Recleaning should be conducted under the direct supervision of a certified supervisor. Care should be exercised during the recleaning of "failed" surfaces or components to avoid recontaminating "cleared" surfaces or components.

VI. Cleaning Cost Considerations

An important consideration in determining lead hazard control strategies and methods is the cost and difficulty of required daily and final cleanup operations and the ease with which one can meet dust-clearance standards. A general rule of thumb is that lead hazard control strategies that generate the most dust will have higher cleanup costs and higher initial clearance test-failure rates.

A. Initial Clearance Test Failure Rates

The likelihood of passing final dust-clearance tests is highly correlated with the chosen intervention strategy, methods, and care exercised by the contractor. For example, in one study (HUD, 1991) initial wipe-test failure rates were 14 percent for interior window sills, 19 percent for floors, and 33 percent for window troughs. The pass/fail rates for each surface were strongly associated with the dwelling unit abatement strategy employed. Chemical removal and hand-scraping strategies experi-enced higher failure rates than replacement and encapsulation/enclosure strategies (see Table 14.1).

However, results of the HUD demonstration project indicated that clearance failure is not solely related to abatement method. The report stated that "the diligence and effectiveness of an abatement contractor's cleaning process ... had a major impact on ... the likelihood of the dwelling unit to pass the final wipe test clearance" (HUD, 1991).

Figure 14.8c Dispose of Plastic Sheeting in a Plastic Trash Bag.

B. Key Factors In Effective Cleaning

Effective cleaning will be aided by adequate sealing of surfaces with polyethylene sheeting prior to lead hazard control, proper daily cleaning practices, good worker training, and attention to detail. Where poor worksite preparation is employed, additional cleaning may be required to meet clearance.

C. Special Problems

Surfaces such as porous concrete, old porous hardwood floors, and areas such as corners of rooms and window troughs pose especially difficult cleaning challenges. Porous concrete and corners of rooms normally require additional vacuuming to achieve an acceptable level of cleanliness.

The lead hazard control strategy of enclosure is frequently chosen for window troughs and for old porous hardwood floors due to the difficulty of adequately cleaning these surfaces. This

option provides not only a clean surface but a more permanently cleanable surface for dwelling occupants to maintain.

VII. Alternative Methods

Alternatives to the recommended cleaning tools and practices discussed in this chapter are available, some having significant potential for increasing effectiveness and lowering costs.

A recent Canadian study (CMHC, 1992) evaluated the effectiveness of contaminated dust cleanup activities using tools that would generally be available to construction contractors and homeowners. Vinyl flooring and carpeting were cleaned using several wet/dry vacuuming systems, sweeping, and wet mopping. The study found that regular vacuums with empty bags send a steady stream of fine particles into the air, while vacuums with partially filled bags were more efficient. This finding suggests the necessity for HEPA vacuums. Other vacuums may be used if workers do not experience increased exposures, if compliance with clearance standards is achieved, and if a variance from OSHA regulation (29 CFR 1926.62 (h)(4)) is obtained by the contractor or employer (if required).

Agitator heads on vacuums were demonstrated to significantly enhance vacuum effectiveness on carpets in cleaning up fine dust without increasing airborne dust levels. Table 14.2 suggests that a central vacuum with an agitator head is most efficient at removing dust and minimizing recontamination, probably because the vacuum exhaust is blown away from living areas. Because many houses do not have central vacuuming systems, a portable HEPA vacuum is the next best choice (see Table 14.2). Vacuums without agitator heads appeared to perform relatively poorly on carpets.

A. Vacuums

Regular (non-HEPA) dry vacuums potentially produce hazardous levels of airborne dust and therefore should be avoided. Externally exhausted vacuum units with adequate dust-retaining capability may be used. The OSHA lead standard requires the use of HEPA vacuum equipment (see 29 CFR 1926.62 (h)(4), which states, "where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters").

B. Trisodium Phosphate and Other Detergents

TSP detergents have been used successfully for a number of years in lead hazard control work. However, in recent years, other new cleaning agents have been developed specifically for leaded dust removal. The need for alternatives has been fueled by the fact that TSP is an eye

Table 14.1 Initial Cleaning Wipe-Test Failure Rates for Various Abatement Strategies

Dust Test Location	Hand Scrape w/Heat Gun	Chemical Removal	Enclosure	Encapsulation	Replacement	All Methods
Floors	28.8%	22.7%	20.0%	13.8%	12.5%	19%
Sills	24.4%	24.1%	8.2%	4.8%	17.4%	14%
Wells	44.5%	45.7%	23.7%	25.7%	21.0%	33%

Source: U.S. Department of Housing and Urban Development (August 1991) The HUD Lead-Based Paint Abatement Demonstration (FHA)

and skin irritant and is increasingly restricted from household use and unavailable in many local jurisdictions. TSP also damages some finishes. Recently reported trials of two new products suggest that alternative lead-specific cleaning agents may be more effective and safer than TSP (Grawe, 1993; Wilson, 1993).

These *Guidelines* do not prohibit the use of non-TSP cleaning agents. HUD encourages further evaluation of alternative cleaning methods. Use of any cleaning agent that results in compliance with clearance criteria is encouraged.

Table 14.2 Mass Removal Efficiency for Extended Vacuuming Cycles

Cycle Number	Mass Removal Efficiency Percentages			
	Cleaning Method			
	Central Vacuum—Plain Tool	Central Vacuum—Agitator Head	HEPA Vacuum	Portable Vacuum—Plain Tool
1	34.7	71.0	55.4	17.5
2	47.0	80.2	61.2	23.0
3	51.9	85.9	66.3	26.6
4	56.0	87.8	67.0	29.4
5	59.3	88.9	72.1	32.5
6	61.6	91.2	74.4	34.9
7	63.8	93.1	76.4	36.5
8	67.5	95.4	77.5	38.1
9	67.5	97.7	78.7	40.1
10	67.2	100.0	80.2	41.7
11		102.3	80.2	41.7
12		104.6	84.1	44.8
13		104.6	84.5	46.8
14		103.8	84.5	48.4
15				49.6
16				50.8
17				52.4
18				53.6
19				54.4
20				55.2

Source: Canada Mortgage and Housing Corporation: Saskatchewan Research Council (December 1992) *Effectiveness of Clean-up Techniques for Leaded Paint Dust*

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Syracuse Readiness Center
Syracuse, NY 13211

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
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Project No. 1061-15
January 26, 2013

Bonus Environmental, LLC

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Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Syracuse Readiness Center, Syracuse, NY 13211

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Syracuse Readiness Center located at 6900 Thompson Road in Syracuse, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 12, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Syracuse Readiness Center is an Army National Guard armory comprised of offices, classrooms, locker rooms, storage rooms, a drill hall, kitchens, conference rooms, electrical/mechanical/telecom rooms, Supply rooms, a boiler room, a fitness room, and a former indoor firing range (currently used as a locker room). The point of contact for the approximately 88,548 ft² Syracuse Readiness Center is Mr. Non-Responsive. Sixty (60) full-time administrative personnel and six (6) maintenance personnel are employed at the Syracuse Readiness Center. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twenty four (24) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Syracuse Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
Syracuse RC-LW-1	11-12-12	Field Blank	---	< 12 μg
Syracuse RC - LW-2	11-12-12	Drill Hall, on floor, West end	0.111	< 110
Syracuse RC - LW-3	11-12-12	Drill Hall, on floor, East end	0.111	< 110
Syracuse RC - LW-4	11-12-12	Drill Hall, on first aid cabinet	0.111	< 110
Syracuse RC - LW-5	11-12-12	Drill Hall, on top of vending machine	0.111	< 110
Syracuse RC - LW-6	11-12-12	Drill Hall, on top of Amnesty box	0.111	140
Syracuse RC - LW-7	11-12-12	Locker Room 153 (Former Indoor Firing Range), on floor Southeast end	0.111	990
Syracuse RC - LW-8	11-12-12	Locker Room 153 (Former Indoor Firing Range), on locker # F-2	0.111	410
Syracuse RC - LW-9	11-12-12	Locker Room 153 (Former Indoor Firing Range), on top of breaker box #28	0.111	2,100
Syracuse RC - LW-10	11-12-12	Kitchen, on top of warmer	0.111	< 110
Syracuse RC - LW-11	11-12-12	1st Floor Hallway, on top of AED box	0.111	< 110
Syracuse RC -	11-12-12	Classroom 113, on window sill	0.111	< 110

Army National Guard – Syracuse Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
LW-12				
Syracuse RC - LW-13	11-12-12	Storage 114, on table surface	0.111	130
Syracuse RC- LW-14	11-12-12	Classroom 111, on window sill	0.111	< 110
Syracuse RC- LW-15	11-12-12	Office 211, on top of printer	0.111	< 110
Syracuse RC- LW-16	11-12-12	Women's Restroom, on top of paper towel dispenser	0.111	< 110
Syracuse RC- LW-17	11-12-12	Office 212, on top of locker #1	0.111	< 110
Syracuse RC- LW-18	11-12-12	Office, on top of computer tower	0.111	< 110
Syracuse RC - LW-19	11-12-12	Office, on top of filing cabinet	0.111	< 110
Syracuse RC - LW-20	11-12-12	Office, on top of book shelf	0.111	< 110
Syracuse RC - LW-21	11-12-12	Office 217, on top of filing cabinet	0.111	< 110
Syracuse RC - LW-22	11-12-12	2nd Floor Hallway, on window sill	0.111	< 110
Syracuse RC - LW-23	11-12-12	Men's Locker Room, on locker #E-19	0.111	160
Syracuse RC - LW-24	11-12-12	HVAC Unit, on fan side	0.111	120
Syracuse RC - LW-25	11-12-12	HVAC Unit, on supply side	0.111	160

Surface cleanliness threshold = < 200 micrograms per square foot ($\mu g/ft^2$)

The former indoor firing range is currently used as a locker room. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area. The bullet trap had been removed from in the "bullet trap area".

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Syracuse Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC did not identify any areas of damaged or peeling paint.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Syracuse Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Syracuse Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified water-damaged and/or moldy building materials in the following locations:

- Approximately 2 ft^2 of stained dropped-ceiling tile (DCT) in classroom 113;
- Approximately 1 ft^2 of stained DCT in classroom 111;
- Approximately 1 ft^2 of stained DCT in classroom 122;
- Approximately 1 ft^2 of stained DCT in office 219;
- Approximately 1 ft^2 of stained DCT in office 218;
- Approximately 3 ft^2 of stained/moldy DCT in office 234;
- Approximately 1 ft^2 of stained DCT in office 234A
- Approximately 1 ft^2 of stained DCT in office next to Supply room 242;
- Approximately 2 ft^2 of stained DCT in 2^{nd} floor hallway;
- Approximately 4 ft^2 of stained DCT in 1^{st} floor hallway.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Syracuse Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Syracuse Readiness Center facility in good order, with the exception of residual lead dust concentrations in locker room 153 (former indoor firing range).

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Syracuse Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Syracuse Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2)

throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 384 ppm to 507 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 4.0 ppm to 4.5 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Syracuse Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 67.6ºF to 70.9ºF and are considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Syracuse Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 46.6% to 50.1%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Syracuse Readiness Center *Indoor Air Quality Measurements*				
Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, northwest side of building (partly cloudy)	384	4.5	55.8	66.9
Supervisor's Office (100)	507	4.3	49.5	67.6
Women's Restroom	406	4.1	46.7	68.6
Weight Room (103)	388	4.0	50.1	69.5
Office (104)	404	4.4	49.7	69.6
Drill Hall	394	4.2	49.5	69.0
Office (221)	408	4.1	48.8	69.8
Conference Room (223)	425	4.4	48.9	70.1
Copy Room (212)	402	4.2	48.9	70.5
Office	439	4.1	48.4	70.9
Office	399	4.1	46.6	70.9

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Syracuse Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Syracuse Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Classroom (113)	22.0	30	No
Storage (114)	17.3	30	No
Classroom (112)	59.5	30	Yes
Classroom (111)	21.3	30	No
NY Guard Office (120)	23.3	50	No
Maintenance Room	35.1	30	Yes
Classroom (122)	33.8	30	Yes
Storage (124)	25.6	30	No
Storage (124A)	17.2	30	No
Storage (125)	12.8	30	No
Kitchen	15.3	50	No
Dish Wash Area	21.2	30	No
Kitchen Storage	18.0	30	No
Women's Restroom	35.7	5	Yes
Men's Restroom	14.2	5	Yes
Drill Hall (102)	12.5	30	No
Telecommunication's Room (133)	37.8	30	Yes
Electrical Room (132)	11.5	30	No

Army National Guard – Syracuse Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Supervisor's Office (100)	99.4	50	Yes
Mechanical Room (131) (Boiler Room)	24.3	30	No
Locker Room (153) (Former Indoor Firing Range)	31.4	7	Yes
Bar/Dining Area (142)	31.2	10	Yes
Electrical Room (101)	33.2	30	Yes
Telecommunication's Room (102)	28.5	30	No
Weight Room (103)	47.4	30	Yes
Women's Restroom	8.2	5	Yes
Women's Locker Room	13.9	7	Yes
Men's Restroom	48.6	5	Yes
Men's Locker Room	7.1	7	Yes
Storage Room	10.3	30	No
Office (104)	26.6	50	No
Office (106)	69.7	50	Yes
Office (107)	59.7	50	Yes
Office (108)	62.6	50	Yes
Boiler Room (115)	2.6	30	No
Supply Room (114)	23.7	30	No
Office (109)	33.5	50	No
Office (110)	40.2	50	No
Office (111)	51.0	50	Yes
Office (112)	72.9	50	Yes
Engraving Room (113)	27.0	75	No
Supply Room (151)	Inaccessible		
Supply Room (152)	Inaccessible		
Supply Room (150)	Inaccessible		
Supply Room (156)	Inaccessible		
Supply Room (157)	Inaccessible		
Supply Room (158)	Inaccessible		
Office (224)	24.1	50	No
Office (231)	41.9	50	No
Office (230)	29.4	50	No
Office (229)	36.0	50	No
Office (228)	32.0	50	No
Office (227)	30.4	50	No
Office (226)	50.3	50	Yes
Hallway (217)	63.4	5	Yes
Unisex Restroom	31.6	5	Yes
Office (221)	75.9	50	Yes
Copy Room (222)	156.8	10	Yes
Office (220)	23.7	50	No
Office (219)	59.0	50	Yes
Conference Room (223)	154.5	30	Yes
Office (218)	139.4	50	Yes
Classroom (201)	28.5	30	No
Kitchen	19.5	50	No
Women's Restroom	62.8	5	Yes

Army National Guard – Syracuse Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Men's Restroom	69.6	5	Yes
Office (207)	94.3	50	Yes
Office (216)	37.0	50	No
Office (215)	36.7	50	No
Office (214)	58.5	50	Yes
Storage (213)	39.5	30	Yes
Copy Room (212)	99.1	10	Yes
Office (211)	46.2	50	No
Office (210)	55.6	50	Yes
Office (209)	69.1	50	Yes
Office (208)	64.2	50	Yes
Office (236)	40.5	50	No
Office (237)	15.4	50	No
Classroom (238)	123.6	30	Yes
Office (234)	13.9	50	No
Office (234A)	38.5	50	No
Office (234B)	29.2	50	No
Office (233)	13.8	50	No
Office (233A)	20.7	50	No
Office (233B)	26.7	50	No
Conference Room (240)	15.8	30	No
Office (241)	19.2	50	No
Library	80.4	30	Yes
Office	42.2	50	No
Office	46.7	50	No
Conference Room	38.8	30	Yes
Office	57.3	50	Yes
Office	52.0	50	Yes
Office	53.1	50	Yes
Office	69.3	50	Yes
Supply Room (242)	19.6	30	No
Supply Room (243)	15.5	30	No
Men's Locker Room (244)	23.8	7	No
Men's Restroom	54.9	5	Yes
Men's Locker Room	34.0	7	Yes
Men's Locker Room (220)	31.6	7	Yes
Conference Room (200)	45.6	30	Yes
Office	45.5	50	No
Office (211)	32.6	50	No
Office (211A)	65.4	50	Yes
Office (211B)	58.1	50	Yes
Women's Restroom	72.5	5	Yes
Women's Locker Room	8.3	7	Yes
Telecommunication's Room (221)	29.4	30	No
Office	69.5	50	Yes
Office	50.2	50	Yes
Office	129.8	50	Yes

Army National Guard – Syracuse Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Office	40.3	50	No
Office	58.4	50	Yes
2nd Floor Hallway	6.0	5	Yes
Office (214)	65.1	50	Yes
Office	55.6	50	Yes
Office	54.2	50	Yes
Office	16.7	50	No
Office	30.8	50	No
Office	75.4	50	Yes
HVAC Room	29.8	30	No
1st Floor Hallway	12.4	5	Yes

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Syracuse Readiness Center, located at 6900 Thompson Road in Syracuse, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 12, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Syracuse Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:

   - Locker Room 153 (Former Indoor Firing Range), on floor, Southeast end
   - Locker Room 153 (Former Indoor Firing Range), on locker #F-2
   - Locker Room 153 (Former Indoor Firing Range), on top of breaker box #28

2. Bonus Environmental, LLC did not identify any areas of peeling paint within the Syracuse Readiness Center.

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified approximately 17 ft^2 of stained drop ceiling tile with approximately 3 ft^2 harboring suspected fungal growth across ten locations within the Syracuse Readiness Center.

5. Bonus Environmental, LLC found the housekeeping practices within Syracuse Readiness Center in good order, with the exception of residual lead dust concentrations in locker room 153 (former indoor firing range).

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Syracuse Readiness Center. All were found to be within their acceptable ranges/limits.

8. Areas within the Syracuse Readiness Center facility were identified as improperly illuminated.

9. No Health and Safety programs were available to review on site, although the Superintendent stated that they have a current PPE program.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC‘s inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

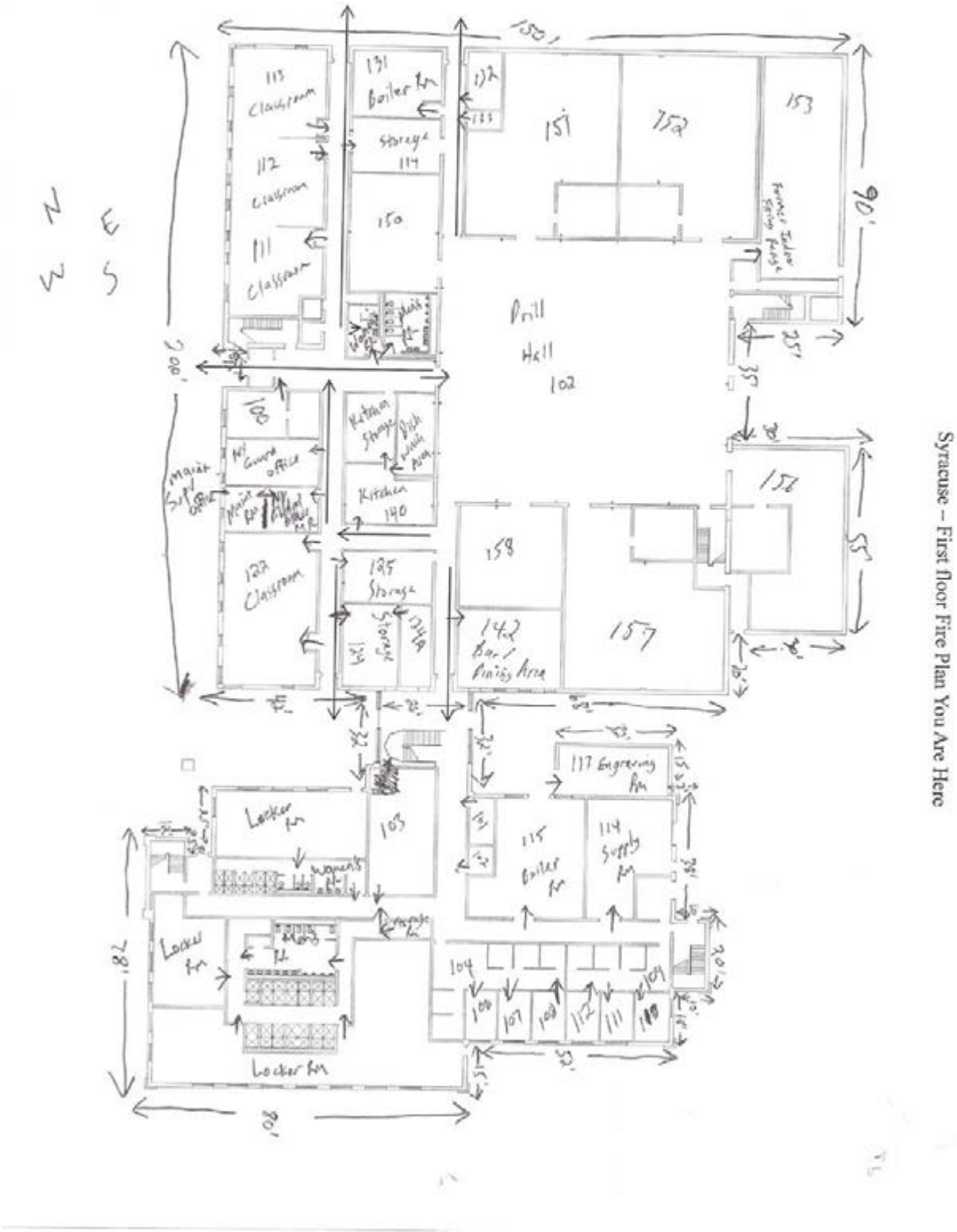
Sincerely,

Non-Responsive

Principal
Bonus Environmental, LLC

Appendix A

Shop Diagram and Air Flow Patterns



Syracuse – First floor Fire Plan You Are Here

Syracuse Second Floor Plan You Are Here

Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Syracuse RC	Chain Of Custody:	514544
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	6900 Thompson Road, Syracuse, NY 13211	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/29/2012 Report Date: 11/29/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13016552	SyracuseRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13016553	SyracuseRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016554	SyracuseRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016555	SyracuseRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016556	SyracuseRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016557	SyracuseRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft^2	15	140	ug/ft^2	
13016558	SyracuseRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft^2	110	990	ug/ft^2	
13016559	SyracuseRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft^2	46	410	ug/ft^2	
13016560	SyracuseRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft^2	230	2100	ug/ft^2	
13016561	SyracuseRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016562	SyracuseRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016563	SyracuseRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016564	SyracuseRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft^2	15	130	ug/ft^2	
13016565	SyracuseRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016566	SyracuseRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016567	SyracuseRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016568	SyracuseRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016569	SyracuseRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016570	SyracuseRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	

AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

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Client:	National Guard Bureau	Job Name:	Syracuse RC	Chain Of Custody:	514544
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	6900 Thompson Road, Syracuse, NY 13211	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/29/2012 Report Date: 11/29/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments
13016571	SyracuseRC-LW-20	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13016572	SyracuseRC-LW-21	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13016573	SyracuseRC-LW-22	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13016574	SyracuseRC-LW-23	Flame	Wipe	****	0.111	110 ug/ft^2	17	160 ug/ft^2	
13016575	SyracuseRC-LW-24	Flame	Wipe	****	0.111	110 ug/ft^2	14	120 ug/ft^2	
13016576	SyracuseRC-LW-25	Flame	Wipe	****	0.111	110 ug/ft^2	18	160 ug/ft^2	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Non-Responsive

Analy

Non-Responsive

Technical Manag

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

514544

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-JH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, Slate Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Syracuse NG
2. Job Location: 6900 Thompson Rd, Syracuse, NY 13211
3. Job #: 1061-15 PO #: W912K6-09-A-0003
4. Contact Pers Non-Responsive @phone #
5. Submitted b Non-Responsive ature:

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include Non-Responsive h Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: [redacted] onusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/30/12	☒ Fax: [redacted] s.army.mil
		☒ Verbal [redacted] s.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 _____ (QTY)
☐ Fiberglass _____ (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA _____ (QTY)
☐ NIOSH 7402 _____ (QTY)
☐ Other (specify _____) _____ (QTY)

PLM Bulk
☐ EPA 600 – Visual Estimate _____ (QTY)
☐ EPA Point Count _____ (QTY)
☐ NY State Friable 198.1 _____ (QTY)
☐ Grav. Reduction ELAP 198.6 _____ (QTY)
☐ Other (specify _____) _____ (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM_(Qual) PLM_(Quant) PLM/TEM_(Qual) PLM/TEM_(Quant) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield _____ (QTY)
☐ NY State PLM/TEM _____ (QTY)
☐ Residual Ash _____ (QTY)

TEM Dust*
☐ Qual. (prec/abs) Vacuum/Dust _____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
☐ Quan. (s/area) Dust D6480-99 _____ (QTY)

TEM Water
☐ Qual. (prec/abs) _____ (QTY)
☐ ELAP 198.2/EPA 100.2 _____ (QTY)
☐ EPA 100.1 _____ (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples ____ °C)

Metals Analysis
☐ Pb Paint Chip _____ (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 25 (QTY)
☐ *Pb Air _____ (QTY)
☐ Pb Soil/Solid _____ (QTY)
☐ Pb TCLP _____ (QTY)
☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Pb Furnace (Media _____) _____ (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
☐ *Spore-Trap ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
☐ *Surface Swab ____ (QTY) ☐ Culturable ID Genus (Media ____) ____ (QTY)
☐ *Surface Tape ____ (QTY) ☐ Culturable ID Species (Media ____) ____ (QTY)
☐ Other (Specify ____) ____ (QTY)

SAMPLE INFORMATION				ANALYSIS					MATRIX						CLIENT CONTACT
CLIENT ID #	SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS					*					*					
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11 / 21 / 12 @ 11:25 Via: FED EX By: Non-Responsive
2. Date/Time Analyzed: ___ / ___ / ___ @ ___ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ___ / ___ / ___ Time: _____ Initials: ____
4. Comments: 799-5736-6928

Surface Sampling Field Data Sheet

Date Collected: 11-12-13
Job Number: 1061-15
Contact Pers: Non-Responsive

Job Name: Syracuse RC
Job Location:
Address: 6900 Thompson Rd
Syracuse, NY 13211

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Syracuse RC-LW-1	Field Blank	←	—	Ghost wipe
Syracuse RC-LW-2	Drill Hall	On Floor, West End	4" x 4"	↓
Syracuse RC-LW-3	Drill Hall	On Floor, East End	↓	↓
Syracuse RC-LW-4	Drill Hall	on First Aid Cabinet	↓	↓
Syracuse RC-LW-5	Drill Hall	On top of vending Machine	↓	↓
Syracuse RC-LW-6	Drill Hall	On top of Amnesty Box	↓	↓
Syracuse RC-LW-7	Locker Rm 153 (Former Indoor Firing Range)	On Floor, SE End	↓	↓
Syracuse RC-LW-8	Locker Rm 153 (Former Indoor Firing Range)	On Locker # F-2	↓	↓
Syracuse RC-LW-9	Locker Rm 153 (Former Indoor Firing Range)	On top of Breaker Box #28	↓	↓
Syracuse RC-LW-10	Kitchen	On top of warmer	↓	↓
Syracuse RC-LW-11	1st Floor Hallway	On top of AED Box	↓	↓
Syracuse RC-LW-12	Classroom 113	On window sill	↓	↓
Syracuse RC-LW-13	Storage 114	On table surface	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-18-13
Job Number: 1061-15
Contact Person: Non-Responsive
Job Name: Syracuse RC
Job Location:
Address: 6900 Thompson Rd
Syracuse, NY 13211
Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Syracuse RC-LW-14	Classroom 111	On window sill	4"x4"	Ghost Wipe
Syracuse RC-LW-15	Office 211	On top of printer		
Syracuse RC-LW-16	Women's RR	On top of Paper Towel Dispenser		
Syracuse RC-LW-17	office 212	On top of locker #1		
Syracuse RC-LW-18	Office	On top of Computer Tower		
Syracuse RC-LW-19	Office	On top of filing cabinet		
Syracuse RC-LW-20	Office	On top of Book Shelf		
Syracuse RC-LW-21	office 217	On top of filing Cabinet		
Syracuse RC-LW-22	2nd Floor Hallway	On window sill		
Syracuse RC-LW-23	Men's Locker Rm	On locker # E-19		
Syracuse RC-LW-24	HVAC Unit	Fan side		
Syracuse RC-LW-25	HVAC Unit	Supply Side		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Photographs

Building exterior, northwest entrance

Building exterior, looking south

Storage room, flammables cabinet

Boiler room

Office 234, stained/moldy dropped-ceiling tile

Mechanical room, air handling unit

Locker room 153 (former indoor firing range)

Drill Hall

Appendix D

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011.

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

MEMORANDUM FOR National Guard Bureau Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 301-IH Old Bay Lane, Havre de Grace, MD 21078

SUBJECT: New York Army National Guard Facilities, Industrial Hygiene Survey, Report No. 55-ML-048L-05/07, Troy Armory, Troy, New York, 20 September 2005

1. Enclosed is a copy of the subject report and two CD-ROMs.

2. Our point of contact is Mr. Non-Responsive, at commercial (410) 436-5474/3118, DSN 584-5475/3118, or electronic mail: Non-Responsive@us.army.mil

FOR THE COMMANDER:

Non-Responsive

Director, Occupational Health Sciences

Encl

CF: (w/o CD ROMs)
USACHPPM-NORTH (MCHB-AN-IH/MR. Non-Responsive)

Readiness thru Health

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U.S. Army Center for Health Promotion and Preventive Medicine

USCHPPM

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
TROY ARMORY
TROY, NEW YORK
20 SEPTEMBER 2005

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03

Readiness Thru Health

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U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed $3000. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Until 1995, it was nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission is expanding to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/ supportive services; investigations and training.

Today, AEHA is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing work environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many other as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- *Integrity is the foundation*
- *Excellence is the standard*
- *Customer satisfaction is the focus*
- *Its people are the most valued resource*
- *Continuous quality improvement is its pathway*

The organization, which stands on the threshold of even greater challenges and responsibilities, has General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue its development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

CHPPM FORM 433-E (MCHB-CS-IPD), OCT 03 *(reverse)*

DEPARTMENT OF THE ARMY
US ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5403

MCHB-TS-OFS

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
TROY ARMORY
TROY, NEW YORK
20 SEPTEMBER 2005

1. PURPOSE. To conduct an industrial hygiene survey at the New York Army National Guard (NYARNG) Troy Armory, Troy, NY to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve as a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

2. CONCLUSIONS. The significant health and safety concerns at the Armory were: high lead levels in surface dust in several locations; potential asbestos, noise, and ergonomic exposures; an inadequate exhaust ventilation system; and the lack of a site-specific Hazard Communication Program.

3. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Lead Exposure. Health RAC 3 for child exposure. Health RAC 4 for adult exposure. Clean horizontal surfaces in the administrative areas to the National Guard Bureau (NGB) Region North Industrial Hygiene Office and U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommended levels. Follow the guidance in National Guide Pamphlet 420-15 and in Appendix E of the report. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the former indoor firing range (IFR) to the Environmental Protection Agency and State of New York lead in dust standards for young children, and clean other horizontal

surfaces in the former IFR and Organizational Maintenance Shop to the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level for lead in dust on frequently contacted surfaces. The former IFR was being used as a general storage area. Personnel entering this area may have been tracking lead contamination throughout the building and into their homes. Ensure that personnel are notified of the potential exposure. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. Health RAC 3 if asbestos is present.

(1) Asbestos-Containing Building Materials. Review Armory and the New York State Division of Military and Naval Affairs office records to determine if there is an Asbestos Management Plan (AMP) for Troy Armory. Perform an asbestos survey if no records are located. If asbestos is found, develop and implement an AMP if there is not one for the Armory.

(2) Brake pad replacement. Ensure that personnel follow the NGB Standard Operating Procedures.

c. Safety and Occupational Health Programs. Health RAC 3. Develop a written Hazard Communication program that is specific to the Troy facility. Review it annually to ensure any changes in policies, procedures or operations have been evaluated.

d. Vehicle Exhaust Ventilation. Health RAC 3.

(1) Evaluate existing exhaust provisions and modify or provide a new system. Ensure that the system can provide at least 1,500 cubic feet per minute per drop to accommodate large turbocharged diesel engines.

(2) Evaluate the systems to ensure that exhaust generated by the engine is removed. Test each engine type serviced in the Armory. Ensure that an industrial hygienist conducts sampling the first time this operation is performed to ensure that the systems are functioning properly.

(3) Ensure preventive maintenance on the ventilation system is performed on a regular basis.

e. Lighting. Health RAC 5. If lighting seems inadequate, use task lighting.

EXSUM, NYARNG, IH Survey, Troy Armory, Troy, NY, Report No. 55-ML-048L-05/07, 20 September 2005

f. Noise Hazards. No RAC can be assigned. Assess noise hazards and implement control measures as appropriate.

g. Ergonomic Hazards. No RAC can be assigned. Assess ergonomic hazards and implement control measures as appropriate.

NYARNG, IH Survey, Troy Armory, Troy, NY, Report No. 55-ML-048L-05/07,
20 September 2005

CONTENTS

INDUSTRIAL HYGIENE SURVEY
REPORT NO. 55-ML-048L-05/07
NEW YORK ARMY NATIONAL GUARD FACILITIES
TROY ARMORY
TROY, NEW YORK
20 SEPTEMBER 2005

1. REFERENCES. See Appendix A.

2. PURPOSE. To conduct an industrial hygiene survey at the New York Army National Guard (NYARNG) Troy Armory, Troy, NY, to identify and measure the existence and extent of potentially hazardous operations or conditions. This survey will serve as a baseline so that an occupational exposure history can be compiled for each civilian or military employee.

3. AUTHORITY. Electronic mail, National Guard Bureau (NGB) Region North Industrial Hygiene Office (NGB-ARS-IHNE/Ms. Non-Responsive), 27 July 2005, subject: SAB.

4. BACKGROUND. No floor plan could be located for this report.

a. Date of Construction. The construction date was 1971.

b. Size of Facility. The facility had 68,400 square feet of floor space. The Armory had an attached automotive shop with 3-4 bays. Each bay had individual ventilation tailpipe exhaust drops.

c. Mission. To support Major Command training.

d. Armory Use by Children. Mr. Non-Responsive, Hub Superintendent, stated that children seldom visit the facility.

e. Point of Contact (POC). The POC was Mr. Non-Responsive Facilities Management Supervisor, 330 Old Niskayuna Road, Latham, NY 12110-2224, Phone: 518-786-4552.

5. FACILITY EVALUATION.

a. Sampling. Surface lead in dust and air sampling was conducted to determine the existence of lead hazards. Results are shown in Appendix B.

b. Physical Condition of Facilities.

(1) Paint. The paint was in good condition throughout the facility. No chipping or deteriorated paint was observed.

(2) Asbestos. Mr. Non-Responsive reported that a small section of pipe insulation (elbows) located above the ceiling in the hallway had been abated within the last six months. He also reported that all records pertaining to asbestos containing building materials were kept at the Latham Headquarters Office. Based on experience with similar facilities, personnel may have been exposed to asbestos during brake pad replacement. It was not determined whether personnel followed the NGB standard operating procedures (SOPs) for this operation, if it was performed.

(3) Mold and Moisture Problems. No mold or moisture problems were observed or reported.

(4) Building Physical Condition. The building was in good condition and had been well maintained.

(5) Indoor Firing Range (IFR). The POC reported that the IFR had been closed, lead had been abated, and the IFR had been converted to a storage area. Mr. Non-Responsive stated that all documentation pertaining to lead abatement was kept at Latham.

c. Safety and Occupational Health Programs. Annual Hazard Communication training was conducted and documented. There was a written Hazard Communication Program (HCP), but it was not specific to the Troy facility as required by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard. The program was a duplicate copy of the Latham facility's program, which had not been updated since April 1994.

d. Heating, Ventilation, and Air Conditioning (HVAC) Systems. The building was heated with hot water. The building was cooled using a combination of central air and window mounted air conditioning units.

e. Vehicle Exhaust Ventilation System. Airflow measurements were conducted using a thermoanemometer.

f. Noise Dosimetry. The POC stated that there were no high noise operations at this facility. No operations with the potential to create noise hazards were observed during the site visit, so no noise monitoring was performed. However, experience with similar vehicle maintenance facilities indicates that noise hazards may be present and should be evaluated.

g. Lighting. The statement of work called for professional judgment to document observed low light levels. Verbal communication between the NGB and U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) decided that all identified light levels should be measured. Due to miscommunication, the project lead visiting this site did not quantify light levels, but did use professional judgment in conducting the lighting survey.

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h. Indoor Air Quality (IAQ). Measurements were conducted to determine if IAQ parameters met the American Society of Heating, Refrigerating, and Air-conditioning Engineers, (ASHRAE) recommended guidelines, and the American Conference of Governmental Industrial Hygienists (ACGIH) exposure limit for carbon monoxide adopted by the Army. An air quality monitor was used for the measurements.

i. Ergonomic Hazards. No operations with the potential to create ergonomic hazards were observed during the site visit. However, experience with similar vehicle maintenance facilities indicates that ergonomic hazards may be present and should be evaluated.

j. Other Building Concerns. None.

6. ASSESSMENT CRITERIA FOR LEAD. See Appendix C.

a. Lead in Air. The Army complies with the OSHA 8-hour time-weighted average Permissible Exposure Limit of 50 micrograms of lead per cubic meter ($\mu g/m^3$) of air.

b. Lead in Dust. The Environmental Protection Agency (EPA) and State of New York limits for lead in dust are 40 micrograms per square foot ($\mu g/ft^2$) on floors, 250 $\mu g/ft^2$ on windowsills, and 400 $\mu g/ft^2$ in window troughs. These limits apply to pre-1978 Army facilities only if children under 6 years of age occupy them for 60 or more hours per year. The NGB Region North Industrial Hygiene Office concurs with the USACHPPM recommended maximum level of 200 $\mu g/ft^2$ on floors and frequently contacted surfaces, which is more stringent for windowsills than the EPA/State standards. This level was adopted from OSHA Compliance Letter CPL 02-02-58.

c. Lead in Paint. Paint containing lead levels of 0.5 percent or more by weight in dried solid (also reported as 5,000 milligrams per kilogram) is considered to be lead-based paint according to both Federal and New York State Regulations. Any paint containing detectable amounts of lead is potentially hazardous to children if it is disturbed or deteriorating.

7. SAMPLING RESULTS AND DISCUSSION.

a. Lead in Dust. Lead in dust sample locations and analytical results are shown in Appendix B. Sample results greater than 40 $\mu g/ft^2$ for floors and 200 $\mu g/ft^2$ for frequently contacted surfaces are highlighted. Lead in dust results significantly exceeded the EPA and State of New York limits for young children. Six lead in dust results exceeded the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum levels for lead in dust on frequently contacted surfaces. The highest levels were found in the former IFR on the HVAC supply air diffuser, light fixtures, and floor. Personnel working in this room were potentially exposed to lead, and may have been tracking lead out of the area and redistributing it into

adjacent rooms in the Armory. This can result in lead exposures for the general workforce and for children visiting this facility. One of the lead in dust sample results exceeded the EPA and the State of New York lead exposure standard for children of 40 µg/ft² on floors and 250 µg/ft² on windowsills. These levels are hazardous to children exposed to lead dust through physical contact, inhalation, or ingestion of lead dust while visiting the Armory.

b. Lead in Air. General area lead in air sampling was conducted in the Drill Hall, Dining Hall, Classroom and former IFR. The air sample results were less than 4 µg/m³, and were below the laboratory analytical reporting limit for lead in air of 1 µg/sample, as well as the OSHA standard of 50 µg/m³ for lead in air over an 8-hour day.

c. Vehicle Exhaust System Ventilation. Table 1 summarizes the vehicle exhaust system measurements.

TABLE 1. Summary of Vehicle Exhaust Ventilation Flow Rates.

Exhaust Fan Unit	Average Face Velocity (feet per minute) (fpm)	Duct Opening Diameter (in) / Area (ft^2)	Calculated Flow Rate (cubic feet per minute) (cfm)
Tailpipe Exhaust 1	2800	6”/0.1963	550
Tailpipe Exhaust 2	3000	6”/0.1963	590
Tailpipe Exhaust 3	3200	6”/0.1963	630
Tailpipe Exhaust 4	2900	6”/0.1963	570

(1) Sampling methodology. Face velocities of the tailpipe exhaust intakes were measured using a thermoanemometer. Tailpipe exhaust ducts were 6 inches in diameter. Tailpipe 1 was at the far end of the building from the vehicle doors. Flow rates were calculated from the measured velocities.

(2) The exhaust system should provide at least 1,500 cubic feet per minute (cfm) exhaust at each drop in accordance with the ACGIH Industrial Ventilation Manual recommendation for 9 liter displacement turbocharged diesel engines run at 1,000 revolutions per minute. This exhaust rate is intended to accommodate large turbocharged diesel engines that are, or may be,

maintained at this Organizational Maintenance Shop (OMS). None of the drops met this criterion.

d. Indoor Air Quality (IAQ). Table 2 summarizes IAQ measurements.

TABLE 2. Indoor Air Quality Measurements.

Location	**CO_2 (ppm)**	**Temp (°F)**	**RH (%)**	**CO (ppm)**	**CO ACGIH Standard (ppm)**
Outdoors	380	78	75	0	25
OMS	513	77.7	62.6	0	25
Drill Hall	390	75	74	0	25
Dining Hall	390	75	74	0	25
Classroom Upstairs	420	73	66	0	25
Former IFR	480	74	59	0	25

(1) Temperature. The indoor temperatures of all rooms sampled were within the ASHRAE recommended guidelines of 71-81 degrees Fahrenheit for an acceptable thermal environment in the summer.

(2) Carbon Dioxide. The outdoor carbon dioxide level was 380 parts per million (ppm). The ASHRAE recommends, for occupant comfort, maintaining carbon dioxide levels below the value of 700 ppm plus the outdoor ambient level. Therefore, carbon dioxide levels should be maintained below 1,080 ppm (700 ppm plus 380 ppm). The carbon dioxide levels in all rooms were well within the ASHRAE recommended guidelines.

(3) Relative Humidity (RH). The RH levels in all rooms tested were slightly above the ASHRAE recommended guidelines of 30-60 percent RH. These readings are not considered to indicate a significant problem, as the outdoor RH was 74.4 percent, and most doors to the facility were open.

(4) Carbon Monoxide. Carbon monoxide levels were well below the ACGIH 8-hour exposure limit of 25 ppm used by the Army.

8. CONCLUSIONS. The significant health and safety concerns at the Armory were: high lead levels in surface dust in several locations; potential asbestos, noise, and ergonomic exposures; an inadequate exhaust ventilation system; and the lack of a site-specific HCP.

9. RECOMMENDATIONS. The Department of Defense Instruction 6055.1 provides Risk Assessment Codes (RACs) for health hazards, a procedure which allows assessment of the magnitude of exposure to physical, chemical, and biological agents and the possible medical effects of exposure. The RAC is an expression of the risk associated with the hazard and combines the hazard severity and accident probability into a single number. The RACs enable one to prioritize hazards. They range in magnitude from 1 to 5, with 1 being the highest priority.

a. Lead Exposure. Health RAC 3 for child exposure. Health RAC 4 for adult exposure. Clean horizontal surfaces in the administrative areas to the NGB Region North Industrial Hygiene Office and USACHPPM recommended levels. Follow the guidance in National Guard Pamphlet 420-15 and in Appendix E. Address all potential lead hazards before continuing to extend the use of this facility to children. If children will visit this facility, clean the floors in the former IFR to the EPA and State of New York lead in dust standards for young children, and clean other horizontal surfaces in the former IFR and OMS to the NGB Region North Industrial Hygiene Office and USACHPPM recommended maximum level for lead in dust on frequently contacted surfaces. The former IFR was being used as a general storage area. Personnel entering this area may have been tracking lead contamination throughout the building and into their homes. Ensure that personnel are notified of the potential exposure. Ensure that personnel wear disposable gloves and disposable coveralls as extra protection when cleaning in all areas identified as having elevated levels of lead. Consult with the NYARNG Environmental Coordinator concerning waste disposal requirements after clean up.

b. Asbestos Exposure. Health RAC 3 if asbestos is present.

(1) The Asbestos Containing Building Material. Review Armory and the New York State Division of Military and Naval Affairs office records to determine if there is an Asbestos Management Plan (AMP) for Troy Armory. Perform an asbestos survey if no records are located. If asbestos is found, develop and implement an AMP if there is not one for the Armory.

(2) Brake pad replacement. Ensure that personnel follow the NGB SOPs.

c. Safety and Occupational Health Programs. Health RAC 3. Develop a written Hazard Communication program that is specific to the Troy facility. Review it annually to ensure any changes in policies, procedures or operations have been evaluated.

d. Vehicle Exhaust Ventilation. Health RAC 3.

(1) Evaluate existing exhaust provisions and modify or provide a new system. Ensure that the system can provide at least 1,500 cfm per drop to accommodate large turbocharged diesel engines.

(2) Evaluate the systems to ensure that exhaust generated by the engine is removed. Test each engine type serviced in the Armory. Ensure that an industrial hygienist conducts sampling the first time this operation is performed to ensure that the systems are functioning properly.

(3) Ensure preventive maintenance on the ventilation system is performed on a regular basis.

e. Lighting. Health RAC 5. If lighting seems inadequate, use task lighting.

f. Noise Hazards. No RAC can be assigned. Assess noise hazards and implement control measures as appropriate.

g. Ergonomic Hazards. No RAC can be assigned. Assess ergonomic hazards and implement control measures as appropriate.

10. PHOTOGRAPHS. See Appendix D.

11. ADDITIONAL ASSISTANCE. For additional assistance or questions concerning this report, please contact the undersigned at DSN 584-3118, commercial 410-436-3118, or by electronic mail: Non-Responsive@us.army.mil

Non-Responsive
Industrial Hygienist
Industrial Hygiene Field Services Program

APPROVED:

Non-Responsive
Program Manager
Industrial Hygiene Field Services Program

APPENDIX A

REFERENCES

Literature Cited.

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8. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000. http://www.usapa.army.mil/pdffiles/p4C_503.pdf

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10. OSHA Directive CPL 02-02-58, Lead Exposure in Construction; Interim Final Rule – Inspection and Compliance Procedures, December 13, 1993.

11. NG Pam 420-15, Facilities Engineering, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

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APPENDIX B

TABLE B-1. Lead in Surface Dust Sampling Locations and Analytical Results.

Wipe Sample Number	**Location of Samples**	**Result (µg/ft²)**
TR-W01	Former IFR – Bullet Trap Area, Center Floor	1,000
TR-W02	Former IFR – Bullet Trap Area, Center Shelf, Back Wall	340
TR-W03	Former IFR – HVAC Supply Grille	8,700
TR-W04	Former IFR – Light Fixture	4,900
TR-W05	Former IFR – Door, Outside Surface	3.3
TR-W06	Storage Area Downstairs	4.6
TR-W08	Dining Hall	20
TR-W09	Kitchen	19
TR-W10	G1 – Personnel Area, Desk Shelf Top	7.4
TR-W11	G3 – Training Area, Office HVAC Supply Grille, FTE	6.9
TR-W13	Drill Hall – NW corner	3.9
TR-W14	Drill Hall – NE corner	<2.7
TR-W16	Drill Hall – SE corner	6.5
TR-W17	Drill Hall – SW corner	34
TR-W18	Drill Hall	<2.7
TR-W19	OMS – Top of Tool Box	260
TR-W20	OMS – Storage Area	70
TR-W21	Upstairs Locker Room	8.7
TR-W22	Stairway – To Upstairs Locker Room	<2.7
TR-W23	Classroom – Upstairs	6.2
TR-W24	Recreation Center – Bar	8.1
TR-W26	Vault – Rifle Rack	34
TR-W27	HVAC Bldg Supply, Rooftop	270

TABLE B-2. Lead in Air Sampling Locations and Analytical Results.

Air Sample Number	**Location of Samples**	**Result (µg/m³)**
TR-A01	Drill Hall	<13
TR-A02	Dining Hall	<13
TR-A03	Class Room	<13
TR-A04	Former IFR	<13

APPENDIX C

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. The OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. The OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If Soldiers clean weapons in the facility, change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. General area air samples collected in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

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APPENDIX D
PHOTOGRAPHS

Indoor Firing Range (IFR)

IFR – Bullet Trap Area – Center Floor

IFR – Bullet Trap Area – Storage Shelf

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IFR – Supply Grille & Light Fixture

Dining Hall

Kitchen – Top Of Microwave

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G1 – Personnel Area – Desk Top

G3 – Training Area – HVAC Supply Grille

Drill Hall – NW Corner

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Drill Hall – NE Corner

Drill Hall – SE Corner

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Drill Hall – Center

OMS – Tool Box Top

OMS – Storage Shelf

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Upstairs locker room – floor

Locker Room Stairway

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Upstairs Classroom

Recreation Center Bar

APPENDIX E

LEAD CLEANING GUIDANCE

CHAPTER 14: CLEANING

Cleaning: How To Do It

1. Include step-by-step procedures for precleaning, cleaning during the job, and daily and final cleanings in project design or specifications.
2. Assign responsibilities to specific workers for cleaning and for maintaining cleaning equipment.
3. Have sufficient cleaning equipment and supplies *before* beginning work.
4. If contamination is extensive, conduct precleaning of the dwelling unit. Move or cover all furniture and other objects.
5. Conduct ongoing cleaning during the job, including regular removal of large and small debris and dust. Decontamination of all tools, equipment, and worker protection gear is required before it leaves containment areas. Electrical equipment should be wiped and high-efficiency particulate air (HEPA) vacuumed, not wetted down, to minimize electrocution hazards.
6. Schedule sufficient time (usually 30 minutes to an hour) for a complete daily cleaning, starting at the same time near the end of each workday after lead hazard control activity has ceased.
7. For final cleaning, wait at least 1 hour after active lead hazard control activity has ceased to let dust particles settle.
8. Use a vacuum cleaner equipped with a HEPA exhaust filter. HEPA vacuum all surfaces in the room (ceilings, walls, trim, and floors). Start with the ceiling and work down, moving toward the entry door. Completely clean each room before moving on.
9. Wash all surfaces with a lead-specific detergent, high-phosphate detergent, or other suitable cleaning agent to dislodge any ground-in contamination, then rinse. Change the cleaning solution after every room is cleaned.
10. Repeat step 8. To meet clearance standards consistently, a HEPA vacuum, wet wash, and HEPA vacuum cycle is recommended. For interim control projects involving dust removal only, the final HEPA vacuuming step is usually not needed (see Chapter 11). Other cleaning methods are acceptable, as long as clearance criteria are met and workers are not overexposed.
11. After final cleaning, perform a visual examination to ensure that all surfaces requiring lead hazard control have been addressed and all visible dust and debris have been removed. Record findings and correct any incomplete work. This visual examination should be performed by the owner or an owner's representative who is independent of the lead hazard control contractor.
12. If other construction work will disturb the lead-based paint surfaces, it should be completed at this point. If those surfaces are disturbed, repeat the final cleaning step after the other construction work has been completed.
13. Paint or otherwise seal treated surfaces and interior floors.
14. Conduct a clearance examination (see Chapter 15).
15. If clearance is not achieved, repeat the final cleaning.

16. Continue clearance testing and repeated cleaning until the dwelling achieves compliance with all clearance standards. As an incentive to conduct ongoing cleaning and a thorough final cleaning, the cost of repeated cleaning after failing to achieve clearance should be borne by the contractor as a matter of the job specification, not the owner.
17. Do not allow residents to enter the work area until cleaning is completed and clearance is established.
18. Cleaning equipment list:
    - HEPA vacuums.
    - Detergent.
    - Waterproof gloves.
    - Rags.
    - Sponges.
    - Mops.
    - Buckets.
    - HEPA vacuum attachments (crevice tools, beater bar for cleaning rugs).
    - 6-mil plastic bags.
    - Debris containers.
    - Waste water containers.
    - Shovels.
    - Rakes.
    - Water-misting sprayers.
    - 6-mil polyethylene sheeting (or equivalent).

Chapter 14: Cleaning

I. Introduction

This chapter describes cleaning procedures to be employed following abatement and interim control work. Dust removal as an interim control measure is covered in Chapter 11.

All lead hazard control activities can produce dangerous quantities of leaded dust. Unless this dust is properly removed, a dwelling unit will be more hazardous after the work is completed than it was originally. Once deposited, leaded dust is difficult to clean effectively. Whenever possible, ongoing and daily cleaning of leaded dust during lead hazard control projects is recommended. Ongoing and daily cleaning is also necessary to minimize worker exposures.

Cleaning is the process of removing visible debris *and* dust particles too small to be seen by the naked eye. Removal of lead-based paint hazards in a dwelling unit will not make the unit safe unless excessive levels of leaded dust are also removed. This is true regardless of whether the dust was present before or generated by the lead hazard control process itself. Improper cleaning can increase the cost of a project considerably because additional cleaning and clearance sampling will be necessary. However, cleaning and clearance can be achieved routinely if care and diligence are exercised.

A. Performance Standard

Although the cleaning methods described in this chapter are feasible and have been shown to be effective in meeting clearance standards, other methods may also be used if they are safe and effective. This performance-oriented approach should stimulate innovation, reduce cost, and ensure safe conditions for both residents and workers.

B. Small Dust Particles

Dust particles that are invisible to the naked eye remain on surfaces after ordinary cleaning procedures. A visibly clean surface may contain high and unacceptable levels of dust particles and require special cleaning procedures.

C. Difficulties in Cleaning

While cleaning is an integral and essential component of any lead hazard control activity, it is also the most likely part of the activity to fail.

Several common reasons for this failure include low clearance standards, worker inexperience, high dust-producing methods, and deadlines.

1. Low Clearance Standards

Because very small particles of leaded dust are easily absorbed by the body when ingested or inhaled, a small amount can create a health hazard for young children. Therefore, "clearance standards" are extremely low for acceptable levels of leaded dust particles on surfaces after hazard control activities, and careful cleaning procedures are required. Although it is not possible to remove *all* leaded dust from a dwelling, it is possible to reduce it to a safe level.

Clearance standards are described more fully in Chapter 15. The permissible amount of leaded dust remaining on each of the following surfaces following lead hazard work is as follows:

- 100 µg/ft² on floors.
- 500 µg/ft² on interior window sills (stools).
- 800 µg/ft² on window troughs (the area where the sash sits when closed).
- 800 µg/ft² on exterior concrete.

These levels are based on wipe sampling. Clearance testing determines whether the premises or area are clean enough to be reoccupied after the completion of a lead paint hazard control project. A cleaned area may not be reoccupied until compliance with clearance standards has been established. To prevent delays, final testing and final cleaning activities should be coordinated.

2. Worker Inexperience

To understand the level of cleanliness required to meet the established clearance standards for hazard control cleanup, new hazard control personnel often require a significant reorientation to cleaning. Many construction workers are used to cleaning up only dust that they can see, not the invisible dust particles that are also important to remove.

3. High Dust-Producing Methods and/or Inadequate Containment

High dust-generating methods, inadequate containment during hazard control work, and poor work practices can all make achievement of clearance particularly difficult. Work practices necessary to prevent spreading of dust throughout a dwelling (e.g., by tracking dust out of work areas) are essential but sometimes tedious. Essential work practices are sometimes mistakenly considered to be "flexible guidelines" rather than necessary standards that are designed to ensure that the job is completed, not only safely, but also on time and within budget.

4. Deadlines

Daily and final cleanings have sometimes been compromised due to project deadlines, since cleaning comes at the end of the job. Hurried efforts often result in clearance failure. Delayed and over-budget hazard control projects are often the result of repeated, unplanned recleanings that are necessitated by inadequate containment and sloppy work practices.

II. Coordination of Cleaning Activities

A. Checklist

The owner or contractor may use the following cleaning checklist before any lead hazard control activity:

- ✓ Is the critical importance of cleaning in a hazard control project understood?
- ✓ Have all workers been trained and certified for hazard control work?
- ✓ Have the precleaning, daily, and final cleanings been scheduled properly and coordinated with the other participants in the hazard control process?
- ✓ Have cleaning equipment and materials been obtained?
- ✓ Do the workers know how to operate and maintain special cleaning equipment, and do they have directions for the proper use of all cleaning materials?
- ✓ Have all workers carefully studied the step-by-step procedures for precleaning (if needed), in-progress cleaning, and daily and final cleanings?
- ✓ Are all workers properly protected during the cleaning processes (see Chapter9)?
- ✓ Have provisions been made to properly contain and store potentially hazardous debris (see Chapter 10)?
- ✓ Have dust-clearance testing and related visual inspections been arranged (see Chapter 15)?
- ✓ Are the clearance criteria to be met fully understood?
- ✓ Have all appropriate surfaces been properly painted or otherwise sealed?
- ✓ Have appropriate records been maintained that document participants' roles in the hazard control project?

B. Equipment Needed for Cleaning

The following equipment is needed to conduct cleaning: high-efficiency particulate air (HEPA) vacuums and attachments (crevice tools, beater bar for cleaning rugs), detergent, waterproof gloves, rags, sponges, mops, buckets, 6-mil plastic bags, debris containers, waste water containers, shovels, rakes, water-misting sprayers, and 6-mil polyethylene plastic sheeting (or equivalent).

C. Waste Disposal

Regulations governing hazardous and nonhazardous waste storage, transportation, and disposal affect both the daily and final cleaning procedures. The hazard control contractor and the disposal contractor should work together to establish formal written procedures, specifying selected containers, storage areas, and debris pickups, to ensure that all relevant regulations are met.

III. Cleaning Methods and Procedures

Many of the special cleaning methods and procedures detailed in this chapter are not standard operating procedure for general home improvement contractors. Therefore, project designers, responsible agencies, or owners must ensure that contractors follow the methods and procedures recommended herein or specially designed alternative procedures, even though some may appear to be redundant and unnecessary. These methods have been shown to be feasible and effective in many situations and skipping steps in the cleaning procedures can be counterproductive.

A. Containment

Because of the difficulty involved in the removal of fine dust, dust generated by hazard control work should be contained to the extent possible to the inside of work areas. Inadequately constructed or maintained containment or poor work practices will result in additional cleaning efforts, due to dust that has leaked out or been tracked out of the work area (see Chapter 8).

B. Basic Cleaning Methods: Wet Wash and Vacuum Cleaning Techniques

Because leaded dust adheres tenaciously, especially to such rough or porous materials as weathered or worn wood surfaces and masonry surfaces (particularly concrete), workers should be trained in cleaning methods. As a motivator, some contractors have awarded bonuses to workers who pass clearance the first time.

Two basic cleaning methods have proven effective, when used concurrently, in lead-based paint hazard control projects: a special vacuum cleaner equipped with a HEPA exhaust filter, followed by wet washing with special cleaning agents and rinsing, followed by a final pass with the HEPA vacuum.

Although HEPA filtered vacuums and trisodium phosphate (TSP) cleaners have been considered the standard cleaning tools for lead hazard control projects, new research, discussed under the "Alternatives Methods" section in this chapter, suggests that other tools and products may also be effective in efficiently cleaning dust while providing adequate worker protection from airborne exposure risks. Some of these innovations may even be superior.

1. HEPA Vacuuming

HEPA vacuums differ from conventional vacuums in that they contain high-efficiency filters that are capable of trapping extremely small, micron-sized particles. These filters can remove particles of 0.3 microns or greater from air at 99.97 percent efficiency or greater. (A micron is 1 millionth of a meter, or about 0.00004 inches.) Some vacuums are equipped with an ultra-low penetration air (ULPA) filter that is capable of filtering out particles of 0.13 microns or greater at 99.9995 percent efficiency. However, these ULPA filters are slightly more expensive, and may be less available than HEPA filters.

Vacuuming with conventional vacuum machines is unlikely to be effective, because much of the fine dust will be exhausted back into the environment where it can settle on surfaces. A recent Canadian study revealed that fine-dust air levels were exceedingly high when a standard portable vacuum with a new bag was used, although partially filled bags were found to be more efficient (CMHC, 1992). Considerations for the proper use of a HEPA vacuum are listed below.

Operating Instructions

There are a numerous manufacturers of HEPA vacuums. Although all HEPA vacuums operate on the same general principle, they may vary considerably with respect to specific procedures, such as how to change the filters. To ensure the proper use of equipment, the manufacturer's operating instructions should be carefully followed and if possible, training sessions arranged with the manufacturer's representative.

Although HEPA vacuums have the same "suction" capacity as ordinary vacuums that are comparably sized, their filters are more efficient. Improper cleaning or changing of HEPA filters may reduce the vacuum's suction capability.

Special Attachments

Because the HEPA vacuum will be used to vacuum surfaces other than floors, operators should buy attachments and appropriate tool kits for use on different surfaces—such as brushes of various sizes, crevice tools, and angular tools.

Selecting Appropriate Size(s)

HEPA vacuums are available in numerous sizes, ranging from a small lunchbucket-sized unit to track-mounted systems. Two criteria for size selection are the size of the job and the type of electrical power available. Manufacturer recommendations should be followed.

Wet-Dry HEPA Vacuums

Some hazard control contractors have found the wet-dry HEPA vacuums to be particularly effective in meeting clearance standards. These vacuums are equipped with a special shut-off float switch to protect the electrical motor from water contact.

Prefilters

HEPA filters are usually used in conjunction with a prefilter or series of prefilters that trap the bulk of the dust in the exhaust airstream, particularly the larger particles. The HEPA filter traps most of the remaining small particles that have passed through the prefilter(s). All filters must be maintained and replaced or cleaned as specified in the manufacturer's instructions. Failure to do so may cause a reduction in suction power (thus reducing the vacuum's efficiency and effectiveness). Failure to change prefilters may damage the vacuum motor and will also shorten the service life of the HEPA filter, which is far more expensive than the prefilters.

HEPA Vacuuming Procedures

Surfaces frequently vacuumed include ceilings, walls, floors, windows, interior and exterior sills, doors, heating, ventilation, and air conditioning (HVAC) equipment (heating diffusers, radiators, pipes, vents), fixtures of any kind (light, bathroom, kitchen), built-in cabinets, and appliances.

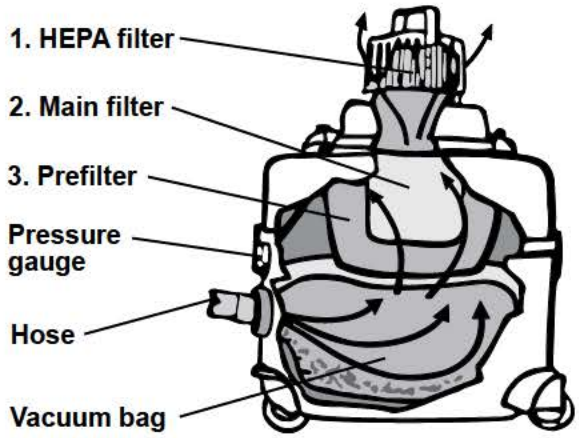
To aid in dislodging and collecting deep dust and lead from carpets, the HEPA vacuum must be equipped with a beater bar (agitator head) that is fixed to the cleaning head. This bar should be used on all passes on the carpet face during dry vacuuming (see Chapter 11 for details on carpet and furniture cleaning).

All rooms and surfaces should be included in the HEPA vacuum process, except for those that (1) were found not to have lead-paint hazards *and* were properly separated from work areas before the process began (see Chapter 8), or (2) were never entered during the process. Porches, sidewalks, driveways, and other exterior surfaces should be vacuumed if exterior hazard control work was conducted, or if debris was stored or dropped outside. Vacuuming should begin on the ceilings and end on the floors, sequenced to avoid passing through rooms already cleaned, with the dwellings' entryway cleaned last.

Emptying the HEPA Vacuum

Used filters and vacuumed debris are potentially hazardous waste and should be treated accordingly (see Chapter10). Therefore, operators should use extreme caution when opening the HEPA vacuum for filter replacement or debris removal to avoid accidental release of accumulated dust into the environment. This may occur, for example, if the vacuum's seal has been broken and the vacuum's bag is disturbed.

Figure 14.1a Vacuum With a HEPA Filter.



Parts of a HEPA-vacuum

Most HEPA-vacuums have three filters: HEPA filter, main filter, and prefilter. Debris gets sucked in through the hose into the vacuum bag. The air and dust get filtered through the prefilter, the main filter, and the HEPA filter. The HEPA filter captures the lead dust before the air is released into the work area again.

Operators should also wear a full set of protective clothing and equipment, including appropriate respirators, when performing this maintenance function, which should be done in the containment area or offsite.

2. Wet Detergent Wash

Several types of detergents have been used to remove leaded dust. Those with a high-phosphate content (containing at least 5 percent trisodium phosphate, also known as TSP) have been found to be effective when used as part of the final cleaning process (Milar, 1982). TSP detergents are thought to work by coating the surface of dusts with phosphate or polyphosphate groups which reduces electrostatic interactions with other surfaces and thereby permits easier removal. Because of environmental concerns some States have restricted the use of TSP, and some manufacturers have eliminated phosphates from their household detergents. However, high-TSP detergents can usually be found in hardware stores and may be permitted for limited use, such as lead hazard control.

Other non-TSP cleaning agents developed specifically for removing leaded dust have also been found to be effective (possibly more effective than TSP) in limited trials by several

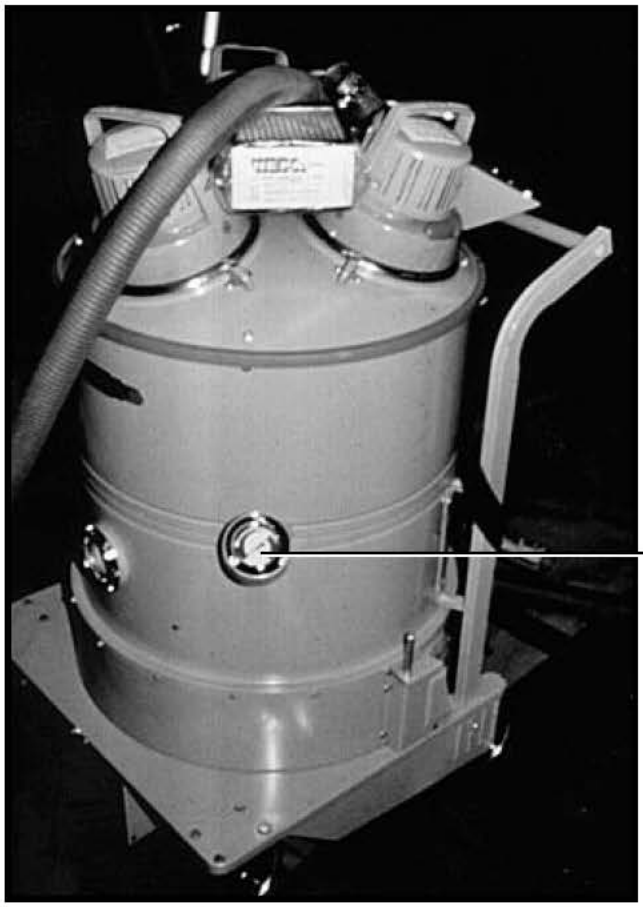
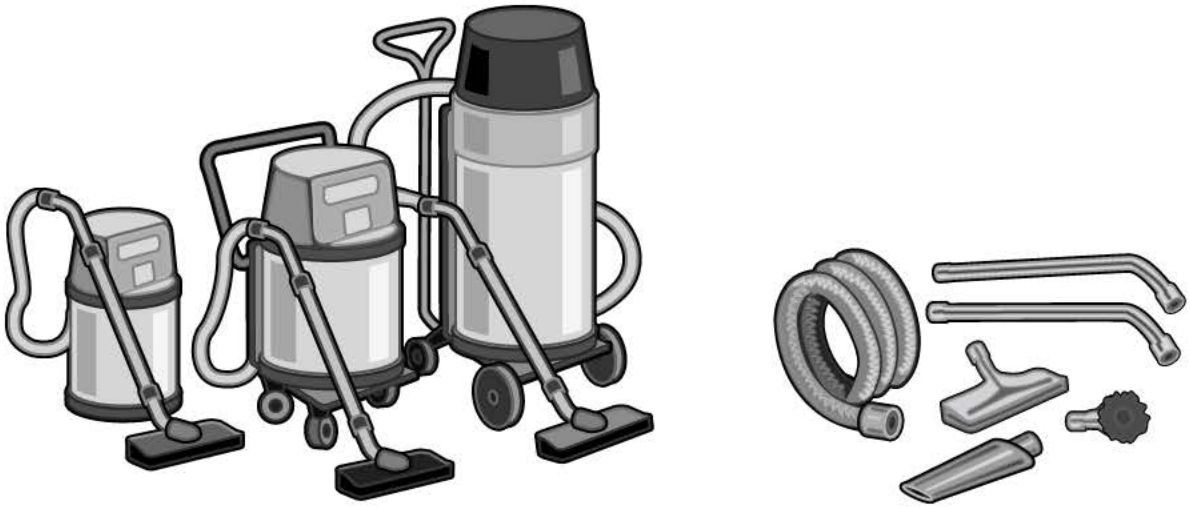


Figure 14.1b Pressure Gauge Indicator Shows When Filters Require Changing.

Figure 14.2 HEPA Vacuum Sizes and Tools.



investigators (Grawe, 1993; Wilson, 1993) and may also be safer, since TSP is a skin and eye irritant. See section VII for more information on non-TSP detergents. Proper procedures for using high-phosphate detergents also apply to most other types of detergents and include the following steps:

Manufacturer's Dilution Instructions

Users of cleaning agents for leaded dust removal should follow manufacturer's instructions for the proper use of a product, especially the recommended dilution ratio. Even diluted, trisodium phosphate is a skin irritant and users should wear waterproof gloves. Eye protection should also be worn, and portable eyewash facilities should be located in or very near the work area. Consult manufacturer's directions for the use of other detergents.

Appropriate Cleaning Equipment

Because a detergent may be used to clean leaded dust from a variety of surfaces, several types of application equipment are needed, including cleaning solution spray bottles, wringer buckets, mops, variously sized hand sponges, brushes, and rags. Using the proper equipment on each surface is essential to the quality of the wet-wash process.

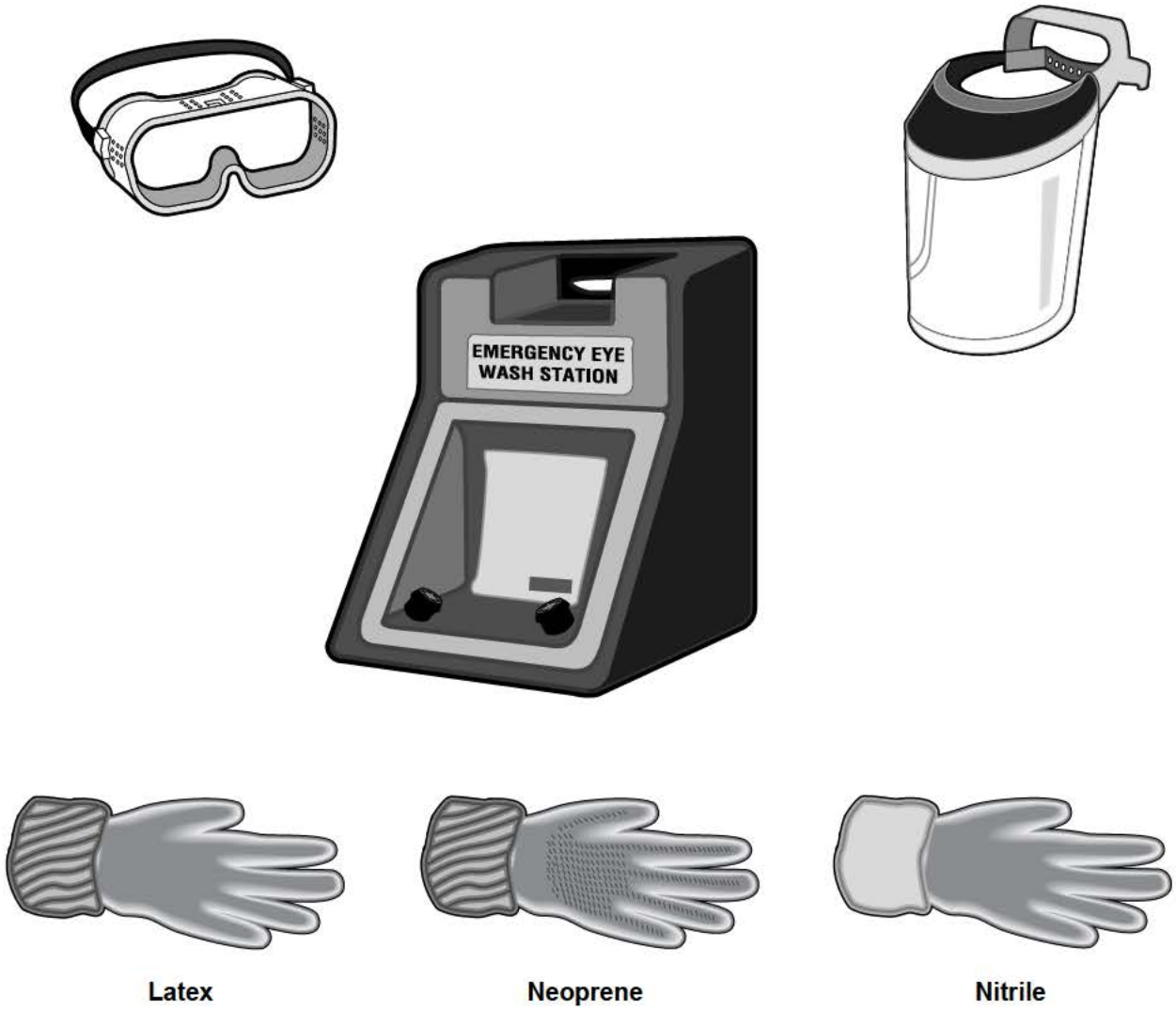
Proper Wet-Cleaning Procedures

At the conclusion of the active lead hazard control process and the initial HEPA vacuuming, all vacuumed surfaces should be thoroughly and completely washed with a high-phosphate solution or other lead-specific cleaning agent (or equivalent) and rinsed. Select a detergent that does not damage existing surface finishes (TSP may damage some finishes). Work should proceed from ceilings to floors and sequenced to avoid passing through rooms already cleaned.

Changing Cleaning Mixture

Many manufacturers of cleaners will indicate the surface area that their cleaning mixture will cover. To avoid recontaminating an area by cleaning it with dirty water, users should follow manufacturer-specified surface-area limits. However, regardless of manufacturers' recommendations, the cleaning mixture should be changed after its use for each room. As a rule of thumb, 5 gallons should be used to clean no

Figure 14.3 Goggles, Face Shields, Gloves, and Eye Wash Facilities Should Be Available When Used With Chemicals Such as TSP.



more than 1,000 square feet. Used cleaning mixture is potentially hazardous waste (see Chapter 10); consult with your local water and sewage utility for directions on its proper disposal. Wash water should never be poured onto the ground. The wash water is usually filtered and then poured down a toilet (if the local water authority approves).

3. The HEPA/Wet Wash/HEPA Cycle

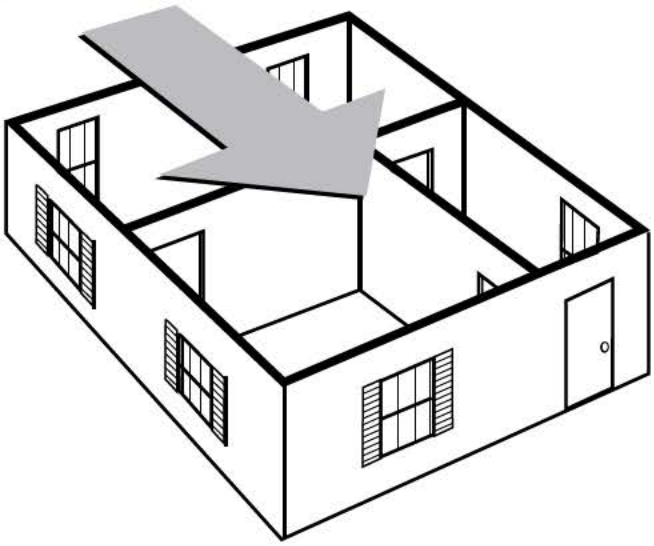
Typical Procedures

The usual cleaning cycle that follows lead hazard control activities is called the HEPA vacuum/wet wash/HEPA cycle and is applied to an entire affected area as follows:

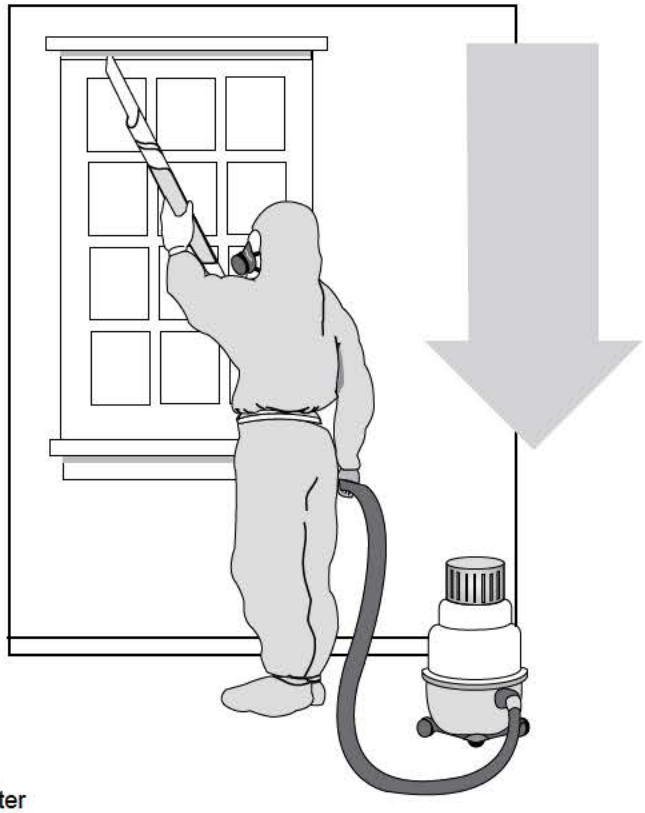
- First, the area is HEPA vacuumed.

Figure 14.4a The HEPA Vacuum, Wet Wash, HEPA Vacuum Cycle Helps in Meeting Clearance Standards.

HEPA vacuum all surfaces
Start at the end farthest from the main entrance/exit. As you vacuum, move towards the main exit and finish there.



Begin at the top of each room and work down. For example, start with the top shelves, the top of the woodwork, and so on, and work down to the floor. Do every inch of the windows, especially the window troughs.



Courtesy: Alice Hamilton Occupational Health Center

- Next, the area is washed down.
- After drying, the area is again HEPA vacuumed.

The rationale for this three-pass system is as follows:

- The first HEPA vacuum removes as much dust and remaining debris as possible.
- The wet wash further dislodges dust from surfaces.
- The final HEPA cycle removes any remaining particles dislodged but not removed by the wet wash.

Single-Pass Wet Wash/HEPA Vacuum

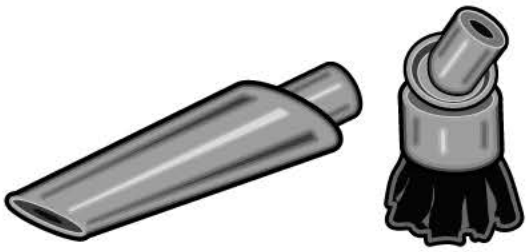
Some lead hazard control contractors have found HEPA spray cleaner vacuums to be a cost-effective alternative to the three-pass system. Similar to home carpet-cleaning machines, these vacuums simultaneously deliver a solution to the surface and recover the dirty solution. Theoretically, this process combines two of the steps in the HEPA vacuum/wet wash/HEPA cycle into one step. While anecdotal evidence indicates that the spray cleaner wet wash/HEPA is effective for some uses, limitations have been noted in its use for ceilings, vertical surfaces, and hard to reach areas. This device may be used as long as clearance standards are met.

Figure 14.4b (continued)

Use special attachments
Use the rubber cone where the floor meets the baseboard and along all the cracks in the floor boards. Use the brush tool for walls and woodwork.

Use the wheeled floor nozzle for bare floors and the carpet beater for rugs.

Move slowly
Vacuum slowly so the HEPA vacuum can pick up all the lead dust.



Rubber Cone **Dust Brush**

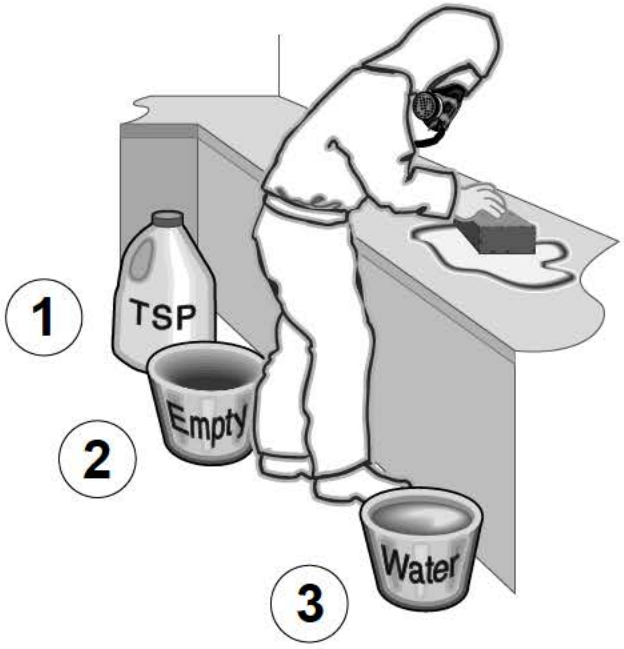
Powered Carpet Beater

Wheeled Floor Nozzle

Figure 14.4c (continued)

Wash all surfaces with suitable detergents

Wash *all surfaces* in the work area with suitable detergents, including areas that had been covered with plastic. Some wallpaper should only be HEPA vacuumed, since it may be damaged by the detergent.



Wipe All Surfaces

Wet Mop Floor

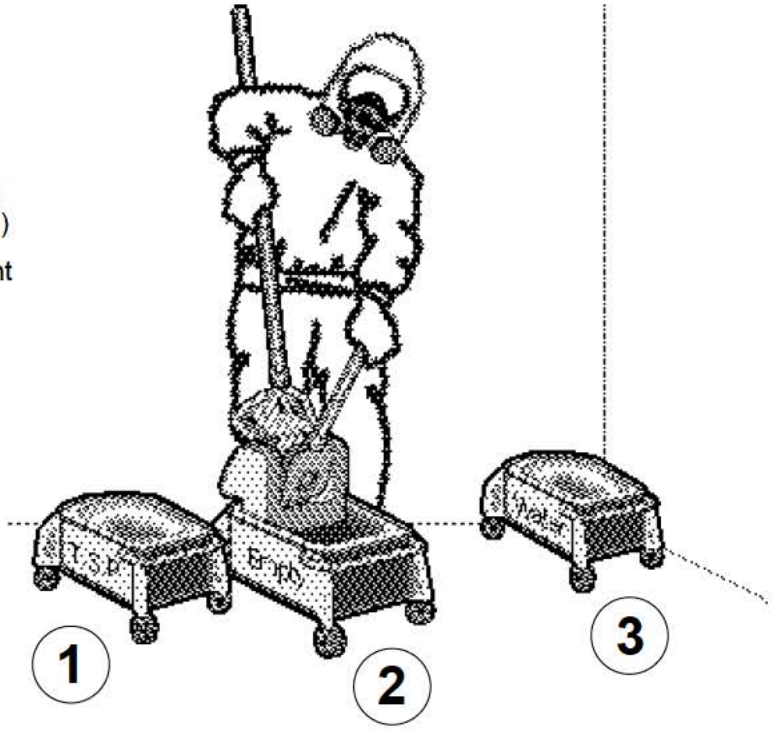
Don't Dry Sweep

Figure 14.4c (continued)

Use the 3-Bucket System.

To wash: Use string mops and mop buckets with wringers. (Some experts say NEVER use a sponge mop on the floor. Sponge mops may only push the lead around on the floor, not remove it.)

Dip the string mophead in the detergent wash in bucket #1. Mop the floor.



Squeeze out the mophead in empty bucket #2. Return to bucket #1 for more detergent solution and continue mopping. Repeat.

Use the third bucket for rinsing the floor.

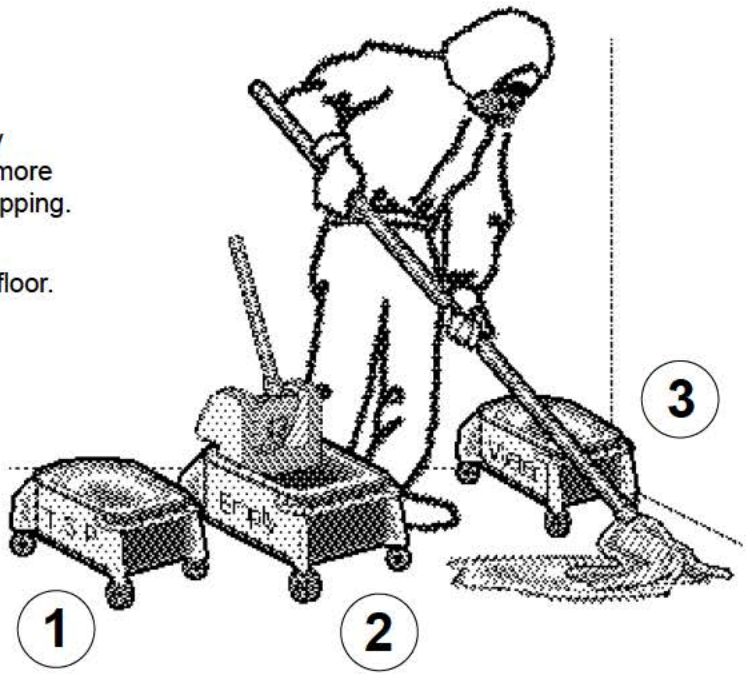
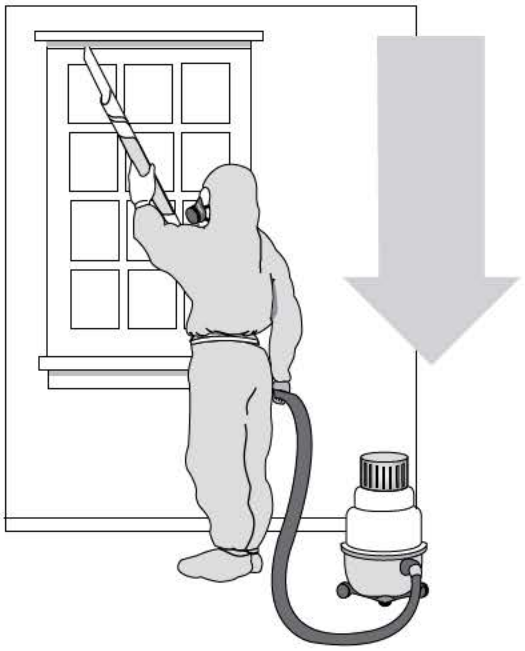


Figure 14.4d (continued)

HEPA vacuum all surfaces a final time
HEPA vacuum *all surfaces* in the work area, including areas that had been covered with plastic.

Starting at the far end, work towards the decontamination area. Begin with ceilings or the top of the walls and work down, cleaning the floors last. Do every inch of the windows, especially the troughs. Use the corner tool to clean where the floor meets the baseboard and all the cracks in the floor boards. Use the brush tool for the walls. Move slowly and carefully to get all the dust.



4. Sealing Floors

Before clearance, all floors without an intact, nonporous coating should be coated. Sealed surfaces are easier for residents to clean and maintain over time than those that are not sealed. Wooden floors should be sealed with a clear polyurethane or painted with deck enamel or durable paint. Vinyl tile, linoleum, and other similar floors should be sealed with an appropriate wax. Concrete floors should be sealed with a concrete sealer or other type of concrete deck enamel. However, if these floors are already covered by an effective coat of sealant, it may be possible to skip this step.

As an alternative to sealing, floors may be covered with new vinyl tile, sheet vinyl, linoleum flooring, or the equivalent to create a more permanent cleanable surface. New surfaces should be cleaned with a cleaning solution that is appropriate for that type of surface.

IV. Order of Cleaning Procedures During Lead Hazard Control

The special cleaning procedures to be followed during a lead-based paint hazard control project are discussed in chronological order below. Skipping steps in the process may result in failure to meet post-lead hazard control clearance standards.

A. Precleaning Procedures

Precleaning (i.e., cleaning conducted before lead hazard control is begun) is necessary only in dwelling units that are heavily contaminated with paint chips. Precleaning involves the removal of large debris and paint chips, followed by HEPA vacuuming. These steps may be followed by removal of occupant personal possessions, furniture, or carpeting, depending on the

Figure 14.5 Single-Pass HEPA Vacuum/Wet Wash Technology.

Worksite Preparation Level selected (see Chapter 8). If the furniture will not be cleaned, it should be removed from the area or covered with plastic prior to beginning the precleaning procedure. Carpeting should always be misted before its removal to control the generation of hazardous dust.

It is usually the resident's responsibility to remove most of his or her personal possessions. However, if necessary, owners or project management should be prepared to complete this activity before lead hazard control work begins. As a last resort, the contractor may pack any remaining belongings and carefully seal and move the boxes, supplying all necessary boxes, packing materials, and staff to complete the task. Following cleaning and clearance, the contractor should return all packed items to their appropriate places. Leaving these tasks to the contractor may be expensive and inefficient, since the contractor will need to be insured for this function if the occupant's

Figure 14.6 Precleaning Is Needed in Areas Where Contamination and Deterioration Are High.

belongings are damaged. Additionally, moving furniture, rugs, drapes, and other items owned by the occupant could increase leaded dust levels. Clearance should be conducted after cleaning but before resident items are moved back in.

B. Ongoing Cleaning During the Job

Periodic HEPA vacuuming during the lead hazard control work may be necessary to minimize tracking of dust and paint chips from one area to another (e.g., when a large amount of paint chips or dust is being generated).

C. Daily Cleaning Procedures

Cleaning activity should be scheduled at the end of each workday when all active lead hazard control throughout the dwelling has ceased. Sufficient time must be allowed for a thorough and complete cleaning (usually about 30 minutes to an hour). Daily cleaning helps achieve clearance dust levels by minimizing problems that may otherwise occur during final cleaning and limiting worker exposures. While daily cleaning can be skipped in vacant dwelling units, it is required when occupants will return in the evening. Under no circumstances should debris or plastic be left outside overnight in an unsecured area, even if the dwelling is vacant. Daily cleaning should consist of:

- Removing large debris.
- Removing small debris.
- HEPA vacuuming, wet clean, HEPA vacuuming (horizontal surfaces only).
- Cleaning exterior.
- Patching and repairing plastic sheeting.
- Securing debris/plastic.

Figure 14.7 Plastic Sheeting Should Be Repaired as Part of Daily Cleanup.

1. Large Debris

Large demolition-type debris (e.g., doors, windows, trim) should be wrapped in 6-mil plastic, sealed with tape, and moved to a secure area on the property designated for waste storage. All sharp corners, edges, and nails should be hammered down to prevent injury and minimize the tearing of plastic. It is not necessary to wrap each individual piece of debris in plastic if the entire load can be wrapped. A secure area either outside or inside the property must be designated as a temporary waste-storage area. Covered, secured, and labeled dumpsters placed on or near the property may be used. Proper segregation of waste should be enforced at this time (see Chapter 10).

2. Small Debris

After being misted with water, small debris should be swept up, collected, and disposed of properly. The swept debris should be placed in double 4-mil or single 6-mil polyethylene (or equivalent) plastic bags, properly sealed, and moved to the designated trash storage area. Trash bags should not be overloaded; overloaded bags may rupture or puncture during handling and transport.

3. Exterior Cleaning

Areas potentially affected by exterior lead hazard control should be protected via a containment system (see Chapter 8). Because weather can adversely affect the efficacy of exterior

containment, the surface plastic of the containment system should be removed at the end of each workday. On a daily basis, as well as during final cleaning, the immediate area should be examined visually to ensure that no debris has escaped containment. Any such debris should be raked or vacuumed and placed in single 6-mil or double 4-mil plastic bags, which should then be sealed and stored along with other contaminated debris. HEPA vacuuming is appropriate for hard exterior surfaces, not soil.

4. Worker Protection Measures

General worker protection measures are discussed in Chapter 9. Studies indicate that during daily cleaning activities, especially while wet sweeping, workers may be exposed to high levels of airborne dust. Therefore, workers should wear protective clothing and equipment, especially appropriate respirators.

5. Maintaining Containment

The integrity of the plastic sheeting used in a lead hazard control project must be maintained. During their daily cleaning activities, workers should monitor the sheeting and immediately repair any holes or rips with 6-mil plastic and duct tape.

V. Order of Final Cleaning Procedures After Lead Hazard Control

Before treated surfaces can be painted or sealed, final cleaning procedures must be completed. Because airborne dust requires time to settle, the final cleaning process should start no sooner than 1 hour after active lead hazard control has ceased in the room. See Appendix 11 for details regarding dust settling.

A. Final Cleaning

As the first stage in the final cleaning, floor plastic should be misted and swept as detailed earlier in this chapter. Upper-level plastic, such as that on cabinets and counters, should be removed first, after it has been misted with water *and cleaned*. All plastic should be folded carefully from the corners/ends to the middle to trap any remaining dust. Next, remove both layers of plastic from the floor.

Plastic sheets used to isolate contaminated rooms from noncontaminated rooms should remain in place until after the cleaning and removal of other plastic sheeting; these sheets may then be misted, cleaned, and removed last.

Removed plastic should be placed into double 4-mil or single 6-mil plastic bags, or plastic bags with equivalent (or better) performance characteristics, which are sealed and removed from the premises. As with daily cleanings, this plastic-removal process usually requires workers to use protective clothing and respirators.

After the plastic has been removed from the contaminated area, the entire area should be cleaned using the HEPA/wet wash/HEPA cycle, starting with the ceiling and working down to the floor. After surfaces are repainted or sealed, a final HEPA/wet wash/HEPA cycle may be necessary if accumulated dust caused by other work is visible.

1. Decontamination of Workers, Supplies, and Equipment

Decontamination is necessary to ensure that worker's families, other workers, and subsequent properties do not become contaminated. Specific procedures for proper decontamination of equipment, tools, and materials prior to their removal from lead hazard control containment areas should be implemented, as described below and in Chapters 9 and 10.

Work clothing, work shoes, and tools should not be placed in a worker's automobile unless they have been laundered or placed in sealed bags. All vacuums and tools that were used should be wiped down using sponges or rags with detergent solutions.

Consumable/disposable supplies, such as mop heads, sponges, and rags, should be replaced, after each dwelling is completed. Soiled items should be treated as contaminated debris (see Chapter 10).

Figure 14.8a Pick Up Corners of Plastic Sheeting.

Figure 14.8b Fold Plastic Inward.

Durable equipment, such as power and hand tools, generators, and vehicles, should be cleaned prior to their removal from the site; the cleaning should consist of a thorough HEPA vacuuming followed by washing.

B. Preliminary Visual Examination

After the preliminary final cleaning effort is completed, the certified supervisor should visually evaluate the entire work area to ensure that all work has been completed and all visible dust and debris have been removed. While the preliminary examination may be performed by the lead hazard control supervisor, contractor, or owner as a preparatory step before the final clearance examination, it does not replace the independent visual assessment conducted during clearance.

If the visual examination results are unsatisfactory, affected surfaces must be retreated and/or recleaned. Therefore, it is more cost effective to have the supervisor rather than the clearance examiner perform this initial examination.

C. Surface Painting or Sealing of Nonfloor Surfaces

The next step of the cleaning process is painting or otherwise sealing all treated surfaces except floors.

Surfaces, including walls, ceilings, and woodwork, should be coated with an appropriate primer and repainted. Surfaces enclosed with vinyl, aluminum coil stock, and other materials traditionally not repainted are exempt from the painting provision.

D. Final Inspection

The final clearance evaluation should take place at least 1 hour after the final cleaning. Clearance has three purposes: 1) to ensure that the lead hazard control work is complete, 2) to detect the presence of leaded dust, and 3) to make sure that all treated surfaces have been repainted or otherwise sealed. Clearance is usually performed after the sealant is applied to the floor. See Chapter 15 for information on clearance examination procedures.

E. Recleaning After Clearance Failure

If after passing the final visual examination, the dwelling unit fails the clearance wipe dust tests,

the HEPA/wet wash/HEPA cleaning cycle should be carefully and methodically repeated. Failure is an indication that the cleaning has not been successful. Recleaning should be conducted under the direct supervision of a certified supervisor. Care should be exercised during the recleaning of "failed" surfaces or components to avoid recontaminating "cleared" surfaces or components.

VI. Cleaning Cost Considerations

An important consideration in determining lead hazard control strategies and methods is the cost and difficulty of required daily and final cleanup operations and the ease with which one can meet dust-clearance standards. A general rule of thumb is that lead hazard control strategies that generate the most dust will have higher cleanup costs and higher initial clearance test-failure rates.

A. Initial Clearance Test Failure Rates

The likelihood of passing final dust-clearance tests is highly correlated with the chosen intervention strategy, methods, and care exercised by the contractor. For example, in one study (HUD, 1991) initial wipe-test failure rates were 14 percent for interior window sills, 19 percent for floors, and 33 percent for window troughs. The pass/fail rates for each surface were strongly associated with the dwelling unit abatement strategy employed. Chemical removal and hand-scraping strategies experi-enced higher failure rates than replacement and encapsulation/enclosure strategies (see Table 14.1).

However, results of the HUD demonstration project indicated that clearance failure is not solely related to abatement method. The report stated that "the diligence and effectiveness of an abatement contractor's cleaning process ... had a major impact on ... the likelihood of the dwelling unit to pass the final wipe test clearance" (HUD, 1991).

Figure 14.8c Dispose of Plastic Sheeting in a Plastic Trash Bag.

B. Key Factors In Effective Cleaning

Effective cleaning will be aided by adequate sealing of surfaces with polyethylene sheeting prior to lead hazard control, proper daily cleaning practices, good worker training, and attention to detail. Where poor worksite preparation is employed, additional cleaning may be required to meet clearance.

C. Special Problems

Surfaces such as porous concrete, old porous hardwood floors, and areas such as corners of rooms and window troughs pose especially difficult cleaning challenges. Porous concrete and corners of rooms normally require additional vacuuming to achieve an acceptable level of cleanliness.

The lead hazard control strategy of enclosure is frequently chosen for window troughs and for old porous hardwood floors due to the difficulty of adequately cleaning these surfaces. This

option provides not only a clean surface but a more permanently cleanable surface for dwelling occupants to maintain.

VII. Alternative Methods

Alternatives to the recommended cleaning tools and practices discussed in this chapter are available, some having significant potential for increasing effectiveness and lowering costs.

A recent Canadian study (CMHC, 1992) evaluated the effectiveness of contaminated dust cleanup activities using tools that would generally be available to construction contractors and homeowners. Vinyl flooring and carpeting were cleaned using several wet/dry vacuuming systems, sweeping, and wet mopping. The study found that regular vacuums with empty bags send a steady stream of fine particles into the air, while vacuums with partially filled bags were more efficient. This finding suggests the necessity for HEPA vacuums. Other vacuums may be used if workers do not experience increased exposures, if compliance with clearance standards is achieved, and if a variance from OSHA regulation (29 CFR 1926.62 (h)(4)) is obtained by the contractor or employer (if required).

Agitator heads on vacuums were demonstrated to significantly enhance vacuum effectiveness on carpets in cleaning up fine dust without increasing airborne dust levels. Table 14.2 suggests that a central vacuum with an agitator head is most efficient at removing dust and minimizing recontamination, probably because the vacuum exhaust is blown away from living areas. Because many houses do not have central vacuuming systems, a portable HEPA vacuum is the next best choice (see Table 14.2). Vacuums without agitator heads appeared to perform relatively poorly on carpets.

A. Vacuums

Regular (non-HEPA) dry vacuums potentially produce hazardous levels of airborne dust and therefore should be avoided. Externally exhausted vacuum units with adequate dust-retaining capability may be used. The OSHA lead standard requires the use of HEPA vacuum equipment (see 29 CFR 1926.62 (h)(4), which states, "where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters").

B. Trisodium Phosphate and Other Detergents

TSP detergents have been used successfully for a number of years in lead hazard control work. However, in recent years, other new cleaning agents have been developed specifically for leaded dust removal. The need for alternatives has been fueled by the fact that TSP is an eye

Table 14.1 Initial Cleaning Wipe-Test Failure Rates for Various Abatement Strategies

Dust Test Location	Hand Scrape w/Heat Gun	Chemical Removal	Enclosure	Encapsulation	Replacement	All Methods
Floors	28.8%	22.7%	20.0%	13.8%	12.5%	19%
Sills	24.4%	24.1%	8.2%	4.8%	17.4%	14%
Wells	44.5%	45.7%	23.7%	25.7%	21.0%	33%

Source: U.S. Department of Housing and Urban Development (August 1991) The HUD Lead-Based Paint Abatement Demonstration (FHA)

and skin irritant and is increasingly restricted from household use and unavailable in many local jurisdictions. TSP also damages some finishes. Recently reported trials of two new products suggest that alternative lead-specific cleaning agents may be more effective and safer than TSP (Grawe, 1993; Wilson, 1993).

These *Guidelines* do not prohibit the use of non-TSP cleaning agents. HUD encourages further evaluation of alternative cleaning methods. Use of any cleaning agent that results in compliance with clearance criteria is encouraged.

Table 14.2 Mass Removal Efficiency for Extended Vacuuming Cycles

Cycle Number	Mass Removal Efficiency Percentages			
	Cleaning Method			
	Central Vacuum—Plain Tool	Central Vacuum—Agitator Head	HEPA Vacuum	Portable Vacuum—Plain Tool
1	34.7	71.0	55.4	17.5
2	47.0	80.2	61.2	23.0
3	51.9	85.9	66.3	26.6
4	56.0	87.8	67.0	29.4
5	59.3	88.9	72.1	32.5
6	61.6	91.2	74.4	34.9
7	63.8	93.1	76.4	36.5
8	67.5	95.4	77.5	38.1
9	67.5	97.7	78.7	40.1
10	67.2	100.0	80.2	41.7
11		102.3	80.2	41.7
12		104.6	84.1	44.8
13		104.6	84.5	46.8
14		103.8	84.5	48.4
15				49.6
16				50.8
17				52.4
18				53.6
19				54.4
20				55.2

Source: Canada Mortgage and Housing Corporation: Saskatchewan Research Council (December 1992) *Effectiveness of Clean-up Techniques for Leaded Paint Dust*

Environmental and Occupational Risk Management®

400 West Cummings Park, Suite 5850
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February 10, 2009

Ms. Shirley Chapman
NGB Region North IH Office
301 – IH Old Bay Lane
Havre De Grace, MD 21078
Non-Responsive@us.army.mil

Re: Results of Industrial Hygiene Survey, 99 South Lake Avenue, Troy, NY – EORM® Project No. NATL0009

Dear Ms. Non-Responsive

At your request, on September 4, 2008, Environmental & Occupational Risk Management, Inc. (EORM®) performed an industrial hygiene survey at the National Guard Readiness Center located at 99 South Lake Avenue, Troy, NY 12180. The observations, methodology, results and discussion are provided in the sections that follow. Should you have any questions please do not hesitate to contact me.

Regards,

Non-Responsive

Non-Responsive, MPH
Associate EHS Consultant
EORM, Inc.
Telephone 781.756.3813
E-mail: Non-Responsive@eorm.com

Reviewed by:

Non-Responsive

Non-Responsive, CIH
Senior EHS Consultant
EORM, Inc.

Attachments

Industrial Hygiene Survey

National Guard Readiness Center
99 South Lake Avenue
Troy, NY 12180

Project No. NATL0009

4 September 2008

Prepared by:

Environmental and Occupational Risk Management®

400 West Cummings Park
Suite 5850
Woburn, MA 01801

Table of Contents

Executive Summary

Environmental and Occupational Risk Management, Inc. (EORM®) was contracted by the National Guard Bureau Industrial Hygiene Region North Office (NGB IH Office) to perform a baseline industrial hygiene (IH) survey of selected Readiness Centers and administrative buildings located in New York. This report summarizes the results of the Troy Readiness Center located at 99 South Lake Avenue, which occurred on September 4, 2008.

During the IH survey, EORM collected surface wipe samples and personal breathing zone samples for lead. The results indicated surface lead contamination throughout much of the basement, first floor, second floor, and third floor of the building. The surface lead contamination did not translate into detectable concentrations of lead in the area air samples on the day of EORM's site visit. However, it is recommended that all rooms with detectable concentrations of surface lead be decontaminated by a contractor specializing in lead decontamination.

Overall the Troy Readiness Center appeared dusty/dirty. There was a lot of peeling paint and water damaged and/or missing ceiling tiles throughout the facility. Three of the four samples of peeling paint indicated lead-based paint.

The lighting in the facility was fairly good. There were some locations on all four floors that have insufficient lighting. The kitchen, several offices on the second floor, and office 3004 on the third floor should have additional lighting installed. The burned out light bulbs in the basement boiler room and storage room should be replaced. In addition, a light switch should be installed in the second floor storage room.

Introduction

Environmental and Occupational Risk Management, Inc. (EORM) was contracted by National Guard Bureau Industrial Hygiene Region North Office (NGB IH Office) to perform an industrial hygiene (IH) survey of selected National Guard Armories located in New York. This report summarizes the results of the Readiness Center located at 99 South Lake Avenue, Troy, New York. The IH survey was performed on September 4, 2008 by Mr Non-Responsive, Associate EHS Consultant. Ms. Non-Responsive CIH, Senior EHS Consultant, reviewed this report and provided project support. The scope of work completed during this survey included the following:

- Collect wipe samples for lead from surfaces within the drill hall, administration building, and the converted indoor firing range, if present
- Collect personal or general area full-shift samples for lead on National Guard members during normal activities
- Inspect the physical condition of the facility and personnel concerns
- Evaluate the heating, ventilating, and air conditioning system
- Conduct a lighting survey in all areas of the facility
- Evaluate the attached garage, if present
- Collect photographs of the interior and exterior conditions of the Readiness Center
- Provide a diagram of the shop layout
- Prepare a detailed report of findings and sampling results, including recommendations for improvement in any areas of concern and conclusion

Industrial Hygiene Survey Details

The wipe samples were collected and analyzed in accordance with the Occupational Safety and Health Administration (OSHA) method ID-125G. The samples were analyzed for lead by AMA Analytical Services, Inc. in Lanham, Maryland. AMA is accredited by the American Industrial Hygiene Association.

The analytical laboratory results and chain-of-custody forms corresponding to these samples are provided in Appendix 3. Table 1 includes the results in micrograms of lead per square foot (µg/ft2).

Table 1: Wipe sample results, September 4, 2008.

Sample Number	Location	Description	Area (ft2)	Results (µg/ft2)
TRY-01	Drill Hall	Top of locker	0.108	< 110
TRY-02	Drill hall	Floor by kitchen	0.108	< 110
TRY-03	Drill hall	Louver on suspended unit ventilator	0.108	1,200
TRY-04	Kitchen	Shelf under counter	0.108	< 110
TRY-05	Drill hall	PT area floor	0.108	200
TRY-06	Outside of drill hall	Floor	0.108	< 110
TRY-07	1st floor conference room	Top of baseboard heater	0.108	260
TRY-08	1st floor hall by G2 (42nd Infantry Office)	Floor	0.108	180
TRY-09	Basement-boiler room	Shelf	0.108	290
TRY-10	Basement-locker room	Top of locker	0.108	200
TRY-11	Basement-electrical room	Electrical panel	0.108	13,000
TRY-12	Basement-locker room	Floor	0.108	1,000
TRY-13	2nd floor hallway	Shelf	0.108	590
TRY-14	2nd floor copy/breakroom	Floor	0.108	< 110
TRY-15	2nd floor office 204	Top of book case	0.108	< 110
TRY-16	2nd floor office 205	Floor	0.108	< 110
TRY-17	2nd floor Commanders office (10th Brigade)	Top of book case	0.108	130
TRY-18	3rd floor hallway	Top of shelving	0.108	< 110
TRY-19	3rd floor office 307	Desk	0.108	< 110
TRY-20	3rd floor office 304	Top of window A/C	0.108	2,200

There was no lead detected on the field blank

The results indicate the surface lead remains on many surfaces throughout the facility. Surface lead was identified on a shelf, locker, electrical panel and floor of the basement. The unit ventilator suspended from the ceiling in the drill hall, the floor of the PT area, a baseboard heater, and the floor in a hallway has surface lead. The top of a book case on the second floor and a third floor window A/C also had surface lead.

Personal Air Sample Results

The personal breathing zone samples were collected and analyzed in accordance with OSHA Method ID-125G. The samples were analyzed for lead by AMA Analytical Services, Inc. in Lanham, Maryland. AMA is accredited by the American Industrial Hygiene Association.

The air samples were collected using a SKC AirChek® sampling pump. Pre- and post-calibration of air flow rates were measured and recorded for the sample using the BIOS DryCal Model DC-I. The sample was collected by sampling air in the employee's breathing zone, or the hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches from the inhalation area.

Two members of the National Guard wore air monitors during normal operations. Mr. Eric Catalano and Mr. Anthony Tremblay performed day-to-day administrative operations throughout the monitoring period. The field notes and analytical laboratory results and chain-of-custody forms corresponding to these samples are provided in Appendix 3. Table 2 includes the results and a comparison to the respective PEL.

Table 2: Personal Breathing Zone Sample Results, September 2, 2008.

Sample Number	Employee	Concentration	OSHA Action Level	OSHA PEL	Exceed PEL or TLV? (Yes / No)
TRY-A1	Mr. Non-Responsive	<3.0 µg/m3	30 µg/m3	50 µg/m3	No
TRY-A2	Non-Responsive	<3.0 µg/m3	30 µg/m3	50 µg/m3	No

There was no lead detected on the field blank

The results of the area air samples indicated that no detectable airborne concentrations of lead was present on the day of EORM's site visit

Facility Inspection and Employee Concerns

The Troy – South Lake Readiness Center is three stories in height and has a basement. The building houses 3 different units (56th PSD, 42nd ISR, and counter drug). Generally, the building appeared dirty/dusty and there were stained and/or missing ceiling tiles throughout the facility. The overall conditions of each floor were as follows:

Basement

- The basement had a noticeably musty odor
- There was exposed earth at a couple locations in the basement, including the storage area and in the hallway
- There were missing ceiling tiles in the small locker room
- There was apparent mold growth on the ceiling in the 56th Personal Services Battalion locker room (large locker room) - See photograph 6 in Appendix 2
- The pipe insulation was intact – no samples were taken

First Floor

- The first floor appeared dusty/dirty
- The paint in the drill hall and PT area is peeling. See photograph 3 in Appendix 2
- There are stained and/or missing ceiling tiles in the hallway by the 42nd ISR offices
- The pipe insulation is all intact – no samples were collected
- There is dust and crumbs on surfaces in the kitchen - Photograph 4 of Appendix 2 shows the condition of the kitchen
- There are missing and/or damaged ceiling tiles in the kitchen and adjacent storage room

Second Floor

- The second floor appeared dusty/dirty
- There are missing and/or stained ceiling tiles in rooms 205 and 206 - See photograph 8, Appendix 2.
- There are only two exit maps posted on the second floor, one of which is in a closet

Third Floor

- The third floor appeared to be less dusty/dirty than the rest of the building
- The ceiling tiles are all in place and undamaged
- There are no exit maps posted on the third floor

Table 3: Paint Chip Results, September 2, 2008.

Sample Number	Location / Description	Concentration (% Pb)
TRY-B1	Basement locker room – peeling paint on window sill	0.45
TRY-B2	Office 213 – peeling paint on window	0.11
TRY-B3	Drill hall PT area – peeling paint on wall	0.0091
TRY-B4	Basement electrical room – peeling paint on pipe	1.1

The results of the paint chip samples indicated that the paint on the window sill in the basement locker room, office 213 window, and basement electrical room pipe contain more than 0.06% or 600 ppm lead, which is the level of which is considered lead based paint by the U.S. Consumer Products Safety Commission 16 CFR 1303 Consumer Products Bearing Lead-Containing Paint.

Ventilation System Evaluation

There are no rooms, such as a battery room, film room, or attached garage that would require specialized ventilation.

The general heating, ventilating, and air-conditioning (HVAC) for the Troy – South Lake Readiness Center is accomplished through a combination of a boiler system for heating and window mounted air-conditioners.

Direct-reading measurements for temperature, relative humidity, and carbon dioxide (CO2) were performed using a Q-Trak Plus Indoor Air Quality Monitor (Model #s 8551). This instrument detects CO_2 using a selective infrared absorption method and displays airborne concentrations in units of ppm. This instrument also measures temperature and relative humidity using electrical sensing methods. It displays temperature in degrees Fahrenheit and relative humidity in percent. The manufacturer's recommended yearly calibration was last performed in January 2008.

Table 4: Indoor door air quality measurements, September 4, 2008.

Location	Number of Occupants	Temp (0F)	RH (% RH)	CO2 (ppm)
Basement electrical room	0	76	69	461
Basement small locker room	0	74	68	402
1st floor drill hall	1	75	68	425
1st floor recruiting office	1	76	67	446
2nd floor	1	78	58	502
2nd floor room 206	3	76	54	558
3RD floor room 303	3	78	56	680
Outdoors	---	80	66	357

The primary cursors for indoor thermal comfort are temperature and relative humidity. Air temperature is recommended to range from 73 to 79°F during summer and from 68 to 75°F during winter (ASHRAE 55-2004) for indoor office environments. This assumes that building occupants are dressed in normal garments and perform mainly sedentary activities. The results indicated that the indoor temperature ranged from 74 to 78°F, which was within the recommended ranges.

The relative humidity (RH) inside buildings should be maintained between 30 and 60% (ASHRAE – 62-2007). When the RH in indoor environments exceeds 60%, microbial growth may occur; whereas, relative humidity below 30% may cause the drying of mucous membranes and discomfort. The results indicated that the indoor relative humidity ranged from 54% to 69% indoors, which exceeded the recommended guideline

The ASHRAE Standard 62-2007, *Ventilation for Acceptable Indoor Air Quality*, has established a reference level based upon human comfort criteria of a maximum CO_2 concentration of 700 ppm above existing outdoor concentrations, below which is suggestive of an adequate quantity of outdoor air supply ventilation to the occupied space. The results indicated the indoor concentration of CO_2 ranged from 402 ppm to 680 pmm and the concurrent outdoor concentration was 357 ppm. This indicates there was sufficient outdoor air supply to the occupied space.

Lighting Survey

The lighting at the Troy-South Readiness Center consists of fluorescent lights and incandescent lights. The fluorescent lights provide the lighting in the drill hall and offices and the incandescent lights are used in the restrooms and storage rooms. A lighting survey was conducted using a Cooke Corporation Cal-Light 400L, serial number 1C040084L. The Cal-Light was calibrated by the manufacturer.

The lighting measurements were compared to the Recommended Practice for Lighting Industrial Facilities RP-7-01 and for Office Building RP-1-04. Both RP-7 and RP-1 are approved by the American National Standards Institute (ANSI) and the Illuminating Engineering Society of North America (IESNA). Table 5 below, summarizes the results of the lighting survey.

Table 5: Lighting Survey Results, September 4, 2008

Location	Measurement (fc)	RP-7 Recommended Illuminance Values[1] (fc)	Meets RP-7 Values? (Yes/No)	Comments
Basement – electrical room	18-55	30	Yes	Low in nonworking areas
Basement – large locker room	6-41	7	Yes	
Basement – sump room	4-6	4	Yes	
Basement – hallway by electrical room	2-12	5	Yes	Average was over 7
Basement – storage room	2	7	No	
Basement – boiler room	1-15	30	No	Light bulbs out
Basement – medium locker room	1-50	7	Yes	Some light bulbs out
Basement – small locker room	30-47	7	Yes	
1st floor – drill hall	30-70	30	Yes	
1st floor – hall by 42nd ISR	8-53	5	Yes	
1st floor – hall by recruiting office	8-32	5	Yes	
1st floor – conference room	26-75	30	Yes	
1st floor – recruiting office	52-71	50	Yes	
1st floor – kitchen	5-55	30-50	No	
2nd floor- recruiting office	33-46	50	No	
2nd floor – room 215	51-94	50	Yes	
2nd floor – room 213	37-46	50	No	
2nd floor – room 214	21-42	50	No	
2nd floor – women's room	14	7	Yes	
2nd floor – room 212	54-102	50	Yes	
2nd floor – storage	2-4	5	No	No working switch
2nd floor – room 204	28-34	50	No	
2nd floor – room 205	51-55	50	Yes	
2nd floor – men's room	10-45	7	Yes	
2nd floor – room 206/break room	50-71	10	Yes	
2nd floor – room 206/office	62-81	50	Yes	
2nd floor – room 208	42-72	50	Yes	Low at non working areas
2nd floor – room 208A	62-83	50	Yes	
2nd floor – hall by 206	26-60	7	Yes	
2nd floor – room 207	60-72	50	Yes	
3rd floor – hallway	23-55	7	Yes	
3rd floor – room 307	61-75	50	Yes	
3rd floor – room 306 (filing)	22-51	30	Yes	Low at nonworking areas
3rd floor – copy room	14-44	30	Yes	Low at nonworking areas
3rd floor – room 304	29-43	50	No	
3rd floor – room 303	30-81	50	Yes	Low at nonworking areas

fc = footcandles

[1] The recommended illuminance values were obtained from the ANSI/IESNA RP-1-04 (Office Lighting) and RP-7-01 (Industrial Lighting)

According to RP-1-04 and RP-7-01, the lighting survey results indicate insufficient lighting in areas of the basement, first floor, second floor, and third floor. Insufficient lighting was detected in the basement storage room and boiler room, the first floor kitchen, the second floor recruiting office, office 204, office 213, office 214, and storage room, and the third floor office 303. There were burned out light bulbs in the basement boiler room and basement locker room. In addition, the second floor storage room had no working switch to turn the lights on.

Evaluation of Attached Garage

The Troy Readiness Center does not have an attached garage.

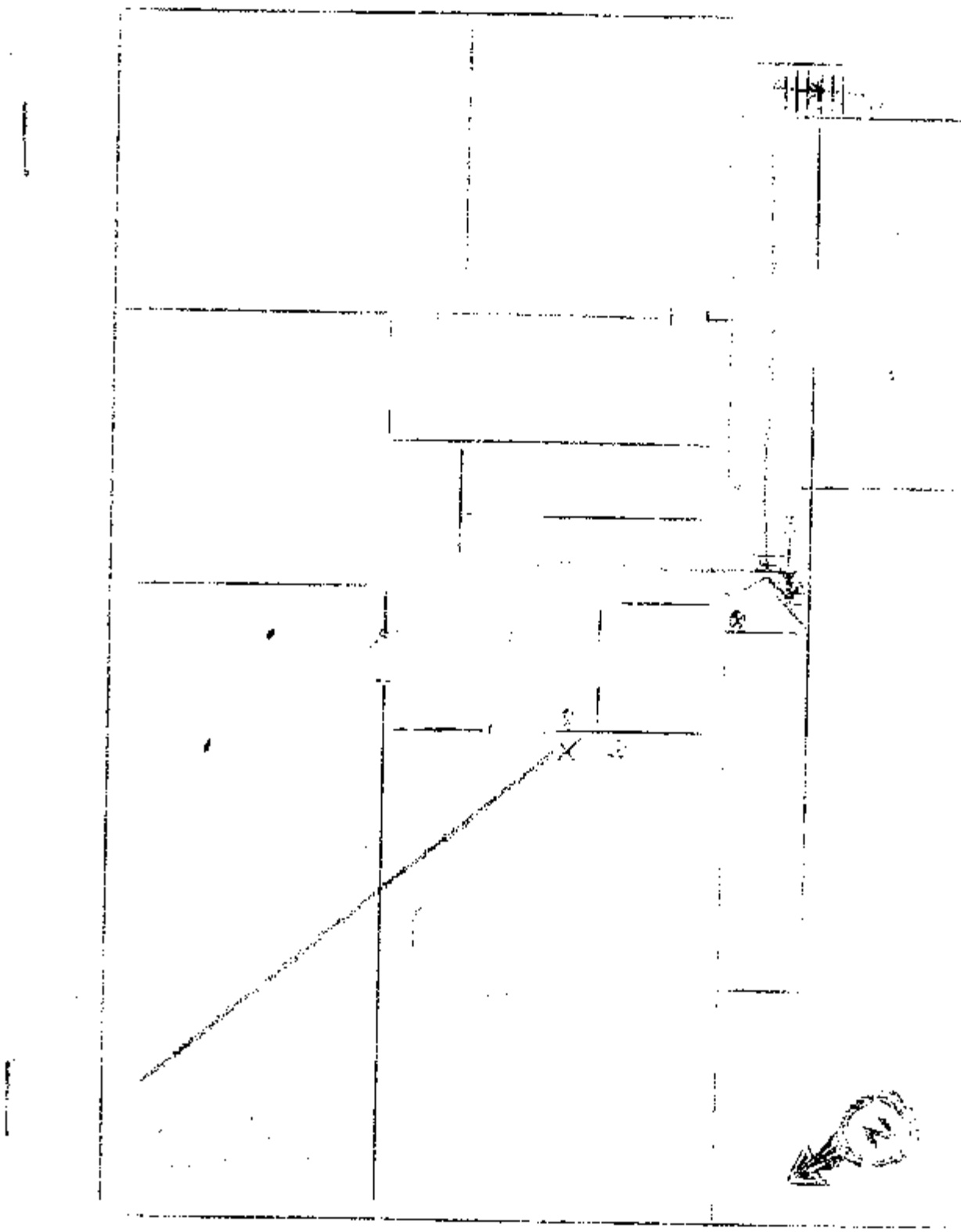
Conclusions and Recommendations

Based on the observations and results of the industrial hygiene survey, EORM has concluded the following:

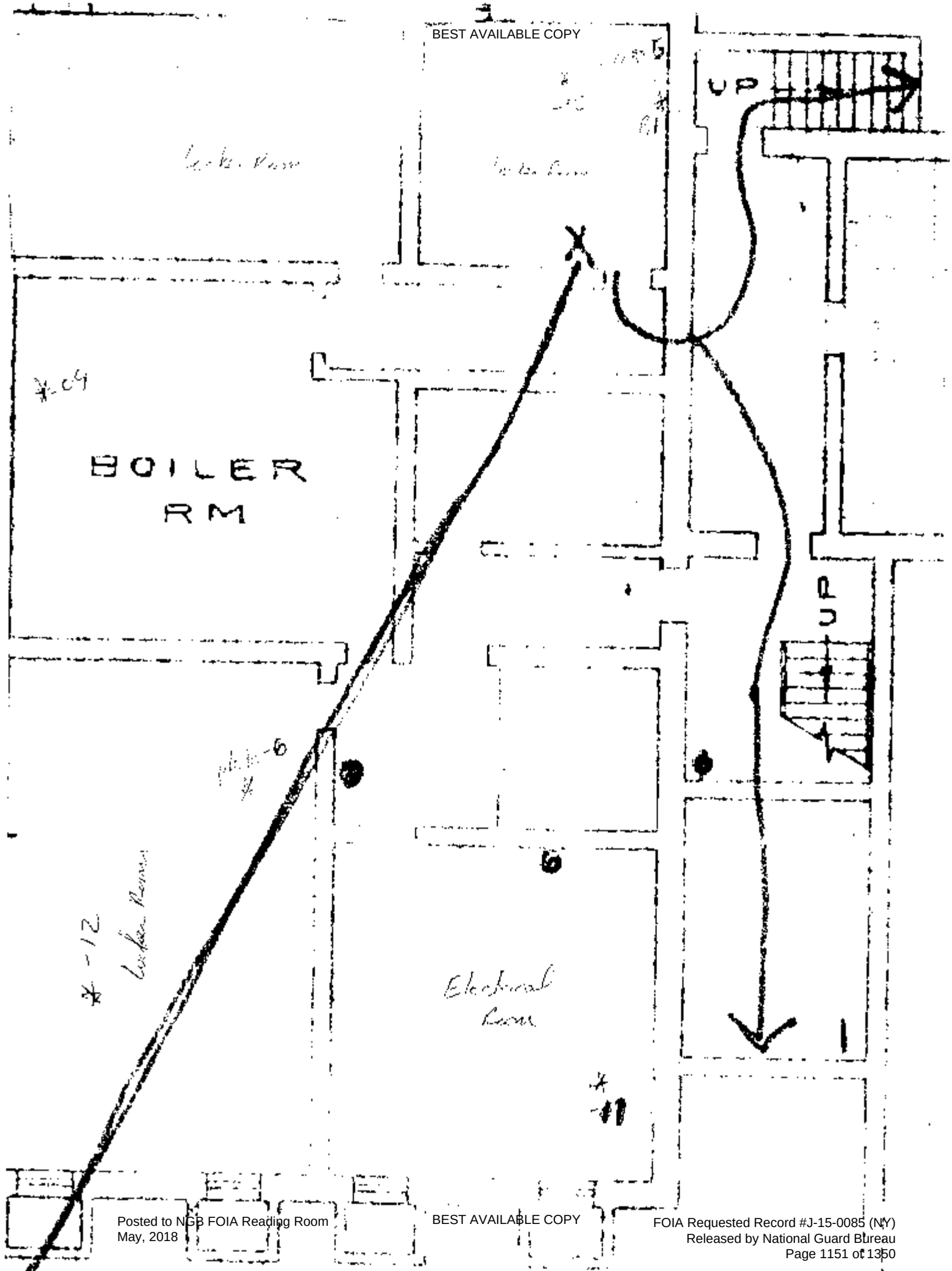
- The surface wipe sample results indicate that lead remains on many surfaces throughout the facility. Surface lead was identified on a shelf, locker, electrical panel and floor of the basement. The unit ventilator suspended from the ceiling in the drill hall, the floor of the PT area, a baseboard heater, and the floor in a hallway has surface lead. The top of a book case on the second floor and a third floor window A/C also had surface lead. EORM recommends that all rooms where lead was identified on surfaces be cleaned by a contractor specializing in lead decontamination.
- The personal breathing zone samples indicated that the surface lead was not airborne on the day of EORM's site visit.
- The lighting survey results indicate insufficient lighting in areas of the basement, first floor, second floor, and third floor. Insufficient lighting was detected in the basement storage room and boiler room, the first floor kitchen, the second floor recruiting office, office 204, office 213, office 214, and storage room, and the third floor office 303. There were burned out light bulbs in the basement boiler room and basement locker room. In addition, the second floor storage room had no working switch to turn the lights on. EORM recommends that the burned out light bulbs be replaced and that a light switch be installed in the second floor storage room. Additional lighting should be provided to the second and third floor offices that have insufficient lighting.

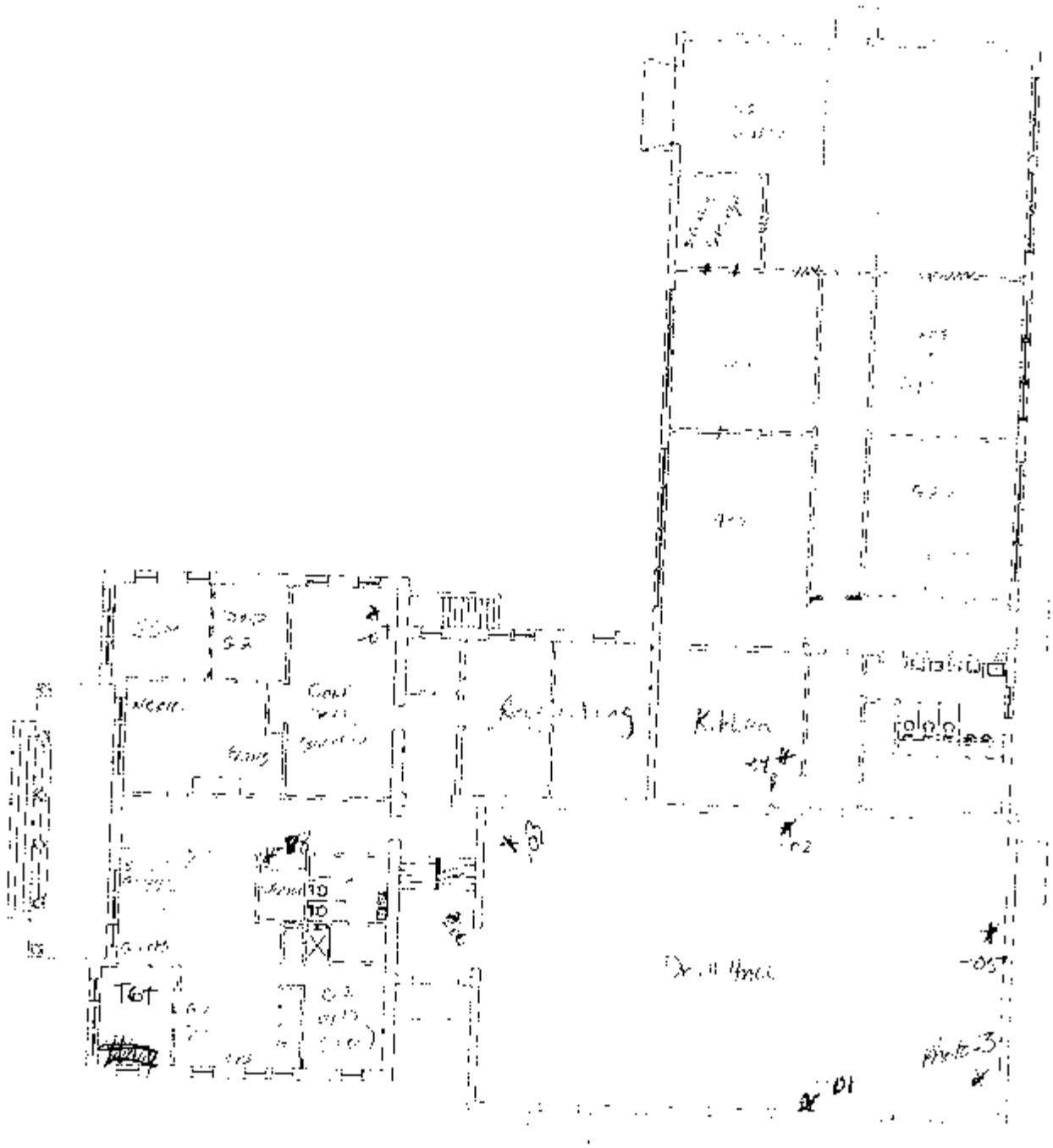
The results of this survey should be communicated to the participants as well as other people who perform similar job duties that did not participate.

Appendix 1 –
Troy Readiness Center Floor Plan



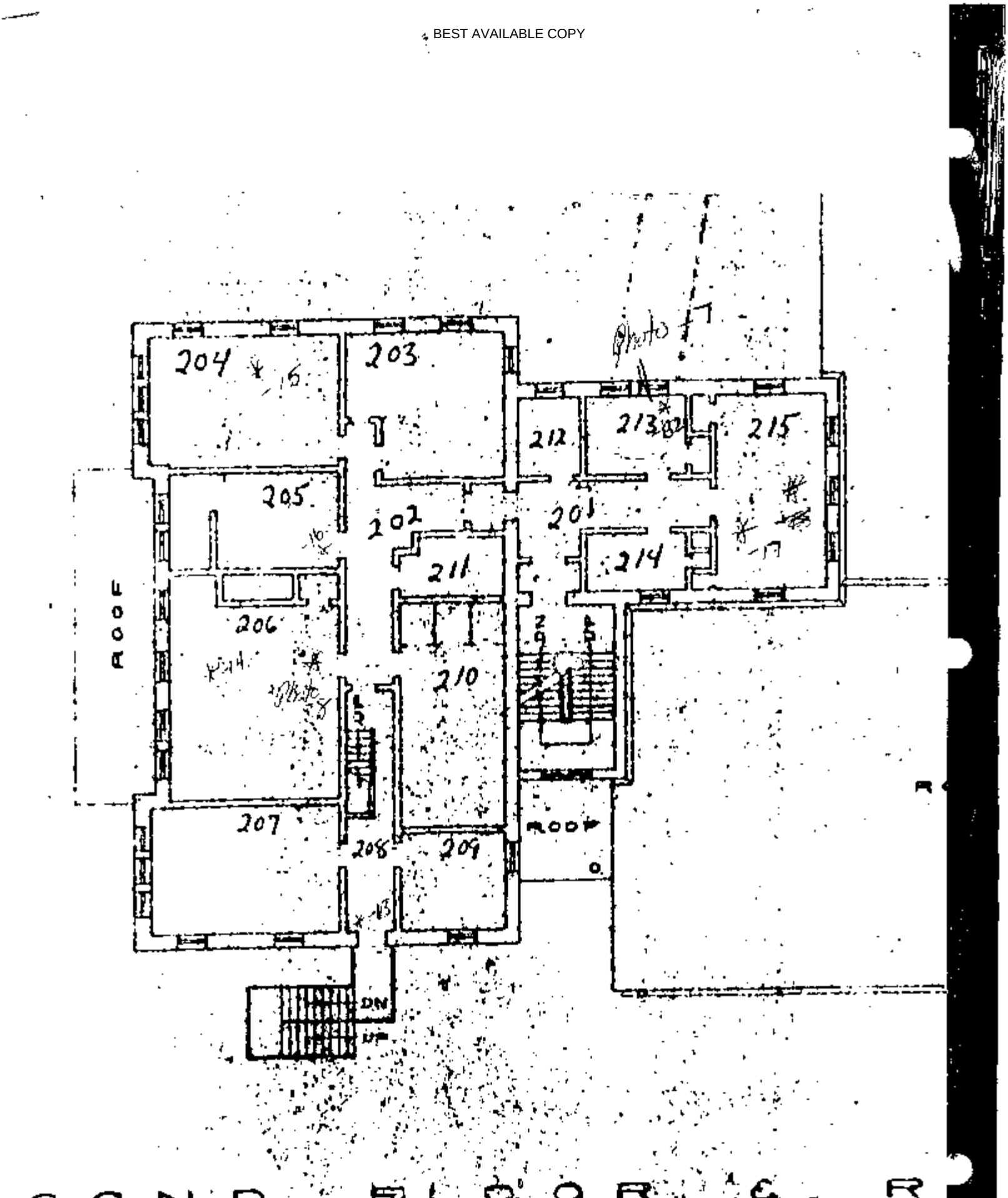
BASEMENT





Troy – South Lake

First floor Plan



COND FLOOR PLAN

SCALE 1/16" = 1'-0"

Appendix 2 – Photographs

Photograph 1: Exterior of building

Photograph 2: Drill hall

Photograph 3: Peeling paint in PT area of drill hall

Photograph 4: Kitchen

Photograph 5: Peeling paint on window sill of basement locker room

Photograph 6: Suspect mold growth on ceiling in basement locker room

Photograph 7: Deputy Commander 10th Brigade, office window

Photograph 8: Office 206 missing ceiling tiles

Appendix 3 – Laboratory Analytical Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP

10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory-Troy South Lake	**Chain Of Custody:**	503197		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	99 S. Lake, Troy NY	**Date Submitted:**	10/3/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	NATL0004	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	10/7/2008	**Report Date:**	10/13/2008
Attention:	Non-Responsive			**Revision Number:**	1	**Revised Date:**	10/13/2008

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0900879	TRY-01	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900880	TRY-02	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900881	TRY-03	Flame	Wipe	****	0.108	110	ug/ft²	1200	ug/ft²	
0900882	TRY-04	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900883	TRY-05	Flame	Wipe	****	0.108	110	ug/ft²	200	ug/ft²	
0900884	TRY-06	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900885	TRY-07	Flame	Wipe	****	0.108	110	ug/ft²	260	ug/ft²	
0900886	TRY-08	Flame	Wipe	****	0.108	110	ug/ft²	180	ug/ft²	
0900887	TRY-09	Flame	Wipe	****	0.108	110	ug/ft²	290	ug/ft²	
0900888	TRY-10	Flame	Wipe	****	0.108	110	ug/ft²	200	ug/ft²	
0900889	TRY-11	Flame	Wipe	****	0.108	110	ug/ft²	13000	ug/ft²	
0900890	TRY-12	Flame	Wipe	****	0.108	110	ug/ft²	1000	ug/ft²	
0900891	TRY-13	Flame	Wipe	****	0.108	110	ug/ft²	590	ug/ft²	
0900892	TRY-14	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900893	TRY-15	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900894	TRY-16	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900895	TRY-17	Flame	Wipe	****	0.108	110	ug/ft²	130	ug/ft²	
0900896	TRY-18	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0900897	TRY-19	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory-Troy South Lake	**Chain Of Custody:**	503197		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	99 S. Lake, Troy NY	**Date Submitted:**	10/3/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	NATL0004	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	10/7/2008	**Report Date:**	10/13/2008
Attention:	Non-Responsive			**Revision Number:**	1	**Revised Date:**	10/13/2008

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0900898	TRY-20	Flame	Wipe	****	0.108	110	ug/ft²	2200	ug/ft²	
0900899	TRY-FB	Flame	Wipe Blank	****	N/A	12	ug	< 12	ug	
0900900	TRY-A1	Flame	Air	0	N/A	3	ug/m³	< 3	ug	
0900901	TRY-A2	Flame	Air	0	N/A	3	ug/m³	< 3	ug	
0900902	TRY-AFB	Flame	Air Blank	0	N/A	3	ug/m³	< 3	ug	
0900903	TRY-B1	Flame	Paint Chip	****	N/A	0.0096	%Pb	0.45	%Pb	
0900904	TRY-B2	Flame	Paint Chip	****	N/A	0.011	%Pb	0.11	%Pb	
0900905	TRY-B3	Flame	Paint Chip	****	N/A	0.0083	%Pb	0.0091	%Pb	
0900906	TRY-B4	Flame	Paint Chip	****	N/A	0.01	%Pb	1.1	%Pb	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.
NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analy: Non-Responsive

Technical Manager: Non-Responsive

Appendix 4 – References

American Conference of Governmental Industrial Hygienists (ACGIH). 2007. *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*.

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62.1-2007, Ventilation for Acceptable Indoor Air Quality.

Code of Federal Regulations (CFR) 29 Part 1910.1000 Air Contaminants.

DODI 6055.1, DOD SO4 Program, 19 August 1998.

RP-1-2004, Office Lighting, ANSI/IESNA

RP-7-2001, Industrial Lighting, ANSI/IESNA, change 20 July 2004.

UFC 3-410-01FA, Unified Facilities Criteria (UFC) for Heating, Ventilating, and Air Conditioning, Department of Defense, 15 May 2003.

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Troy-South Lake Avenue Readiness Center
Troy, NY. 12180-3124

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 18, 2013

Bonus Environmental, LLC

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APPENDICES

January 18, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Troy-South Lake Avenue, NY Readiness Center

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Troy-South Lake Avenue Readiness Center located at 99 South Lake Avenue in Troy, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. No Health & Safety plans were available at Troy-South Lake Avenue Readiness Center for review. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 5, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Troy-South Lake Avenue Readiness Center is an Army National Guard armory comprised of offices, locker rooms, storage rooms, supply rooms, conference rooms, a drill hall, mechanical/electrical rooms, and a kitchen. No former indoor firing range exists at the Troy-South Lake Avenue Readiness Center. The point of contact for the approximately 16,644 ft² Troy-South Lake Avenue Readiness Center is Mr. Non-Responsive. Approximately twelve (12) full-time administrative personnel are employed at the Troy-South Lake Avenue Readiness Center. A shop diagram depicting the locations of the operations identified during this industrial hygiene evaluation, as well as airflow patterns, is provided as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Eighteen (18) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. The following table outlines the locations and analytical results for the lead wipe samples collected during this project

Army National Guard – Troy-South Lake Avenue Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
TroyRC-LW-1	11-5-12	Field Blank	---	< 12 μg
TroyRC-LW-2	11-5-12	Drill hall, center, on floor	0.111	< 110
TroyRC-LW-3	11-5-12	Drill hall, west corner, on heater fin	0.111	1,000
TroyRC-LW-4	11-5-12	Drill hall, south corner, top of pay phone	0.111	130
TroyRC-LW-5	11-5-12	Drill hall, east wall, top of AED case	0.111	< 110
TroyRC-LW-6	11-5-12	Drill hall, east corner, top of locker	0.111	< 110
TroyRC-LW-7	11-5-12	Kitchen, east corner, top of mixing machine	0.111	480
TroyRC-LW-8	11-5-12	Room B7, north corner of room, top of locker	0.111	1,200
TroyRC-LW-9	11-5-12	Conference room, on southwest window sill	0.111	< 110
TroyRC-LW-10	11-5-12	1st floor hallway, on mail desk	0.111	< 110
TroyRC-LW-11	11-5-12	DEP G2 office, top of bookshelf	0.111	< 110
TroyRC-LW-12	11-5-12	42D-ACE Admin area, top of copy machine	0.111	< 110
TroyRC-LW-13	11-5-12	Room 215, on radiant heater	0.111	580
TroyRC-LW-14	11-5-12	Room 202, on east window sill	0.111	390
TroyRC-LW-15	11-5-12	Room 204, top of bookshelf	0.111	< 110
TroyRC-LW-16	11-5-12	Room 209, top of microwave oven	0.111	< 110
TroyRC-LW-17	11-5-12	Room 303, top of television	0.111	< 110
TroyRC-LW-18	11-5-12	Room 305, on light fixture	0.111	200
TroyRC-LW-19	11-5-12	Room 307, on window sill	0.111	250

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Troy-South Lake Avenue Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified the following areas of peeling paint which could potentially pose a lead exposure hazard:

- Approximately 20 ft^2 of peeling green paint in the basement pump room;
- Approximately 8 ft^2 of peeling white paint in basement electrical room;
- Approximately 50 ft^2 of peeling white paint in storage room A2;
- Approximately 40 ft^2 of peeling blue paint in office 2;
- Approximately 2 ft^2 of peeling white paint in restroom 212;
- Approximately 1 ft^2 of peeling white paint in restroom 210.

In addition, room B6 was posted as "No unauthorized access" due to lead contamination resultant from peeling paint in the room.

Three (3) paint chip samples were collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. Analysis indicated that each of the peeling paints collected and submitted contained detectable levels of lead. The paints are therefore considered to be lead-based paints. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Troy-South Lake Avenue Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC identified the following PACM's that were considered to be in poor or damaged condition:

- Approximately 12 ft^2 of damaged drywall ceiling in electrical room B8;
- Approximately 10 ft^2 of damaged drywall ceiling in locker room B7.

One (1) bulk material sample of ceiling drywall was collected and submitted for analysis. These materials indicated "No Asbestos Detected". Asbestos bulk sample results are attached to this report as Appendix C.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Troy-South Lake Avenue Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified the following areas of water-damaged building materials:

- Approximately 200 ft^2 of damaged concrete floor in storage room B5;
- Approximately 12 ft^2 of water-damaged drywall ceiling in electrical room B8;

- Approximately 10 ft^2 of water-damaged drywall ceiling in locker room B7;
- Approximately 5 ft^2 of stained/moldy dropped-ceiling tile (DCT) in men's restroom;
- Approximately 8 ft^2 of stained DCT in hallway;
- Approximately 2 ft^2 of stained DCT in kitchen;
- Approximately 1 ft^2 of stained DCT in G2 Intel Operations Center;
- Approximately 3 ft^2 of stained DCT in DEP G2 office;
- Approximately 2 ft^2 of stained DCT in G2X office;
- Approximately 4 ft^2 of water-damaged concrete wall in office 214;
- Approximately 1 ft^2 of stained DCT in conference room 206;
- Approximately 2 ft^2 of water-damaged metal ceiling in office 305.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Troy-South Lake Avenue Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within the Troy-South Lake Avenue Readiness Center facility to be in good order.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Troy-South Lake Avenue Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following interviews and observations, no ergonomic or indoor air quality concerns were noted.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Troy-South Lake Avenue Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 8554 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 368 ppm to 535 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation all indicated 0.0 ppm. CO levels were well below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Troy-South Lake Avenue Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 64.4ºF to 69.8ºF and are considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Troy-South Lake Avenue Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 35.8% to 63.4%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Troy-South Lake Avenue Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, southwest side of building (overcast)	368	0.0	27.4	49.1
Drill Hall	434	0.0	47.4	64.4
Men's locker room B7	438	0.0	63.4	64.8
Kitchen	429	0.0	47.0	64.6
Recruiter's office	455	0.0	36.4	67.1
G2 Intel Ops Center	427	0.0	39.1	68.9
42D-ACE Admin office	413	0.0	35.8	68.7
Room 215	526	0.0	37.1	69.8
Room 206	535	0.0	39.9	69.6
Room 302	506	0.0	40.1	69.4
Room 306	487	0.0	40.4	69.1

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Troy-South Lake Avenue Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Troy-South Lake Avenue Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Basement, south hallway B1	20.5	5	Yes
Supply room B2	Inaccessible		
Room B4 (storage)	34.9	30	Yes
Room B5 (storage)	18.2	30	No
Room B6	Inaccessible, due to lead contamination		
Room B17 (mech. room)	14.0	30	No
Basement, pump room	11.3	30	No
Room B8 (elec room)	33.9	30	Yes
Room B7 (locker room)	46.9	7	Yes
Drill hall	76.8	30	Yes
Room A2 (storage)	3.9	30	No
Men's restroom	33.1	5	Yes
Hallway	67.3	5	Yes
Room 1	Inaccessible		
Room 2	Inaccessible		
Room 3	Inaccessible		
Room 4	Inaccessible		
Room 5	Inaccessible		
Room 6	Inaccessible		
Kitchen	50.6	50	Yes
Restroom	101.8	5	Yes
Recruiter's office	27.6	50	No
Recruiter's office 2	33.4	50	No
Conference room	41.8	30	Yes
Women's restroom	36.7	5	Yes
G2 Intel Ops Center office	52.3	50	Yes
DEP G2 office	66.7	50	Yes
SGM (office)	73.7	50	Yes
4sD-ACE Admin (office)	46.2	50	No
Office 2	30.1	50	No
G2X (office)	75.3	50	Yes
Room 215 (office)	39.4	50	No
Room 213 (office)	51.9	50	Yes
Room 214 (office)	42.6	50	No
Room 212 (restroom)	16.8	5	Yes
Hallway 201	90.2	5	Yes
Room 202 (office)	24.9	50	No
Room 203A (203A)	127.2	50	Yes
Room 204 (office)	13.5	50	No
Room 205 (office)	46.3	50	No

Army National Guard – Troy-South Lake Avenue Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Room 211 (storage)	55.0	30	Yes
Room 210 (restroom)	21.8	5	Yes
Room 206 (conference room)	115.8	30	Yes
Room 206A (office)	114.5	50	Yes
Room 208A (office)	68.0	50	Yes
Room 207 (copy room)	52.0	10	Yes
Room 209 (office)	45.2	50	No
Room 302 (office)	31.4	50	No
Room 303 (office)	30.7	50	No
Room 304 (storage)	47.3	30	Yes
Room 305 (office)	90.2	50	Yes
Room 306 (storage)	33.9	30	Yes
Room 307 (office)	40.1	50	No
3rd floor hallway	35.0	5	Yes

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Troy-South Lake Avenue Readiness Center facility located at 99 South Lake Avenue in Troy, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 5, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Troy-South Lake Avenue Readiness Center were above the OSHA interpretive level of 200 µg/ft².

2. Bonus Environmental, LLC identified several areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC identified PACM's (that analytical results confirmed to be non-asbestos-containing) that were considered to be in poor or damaged condition.

4. Bonus Environmental, LLC identified water-damaged and/or moldy building materials including drywall, dropped-ceiling tiles, and concrete in several locations throughout the facility.

5. Bonus Environmental, LLC found the housekeeping practices within the Troy-South lake Avenue Readiness Center to be in good order.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Troy-South Lake Avenue Readiness Center. All were found to be below or within their acceptable ranges/limits.

8. Areas within the Troy-South Lake Avenue Readiness Center facility were identified as improperly illuminated.

9. No Health & Safety programs were available for review at the Troy-South Lake Avenue Readiness Center.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

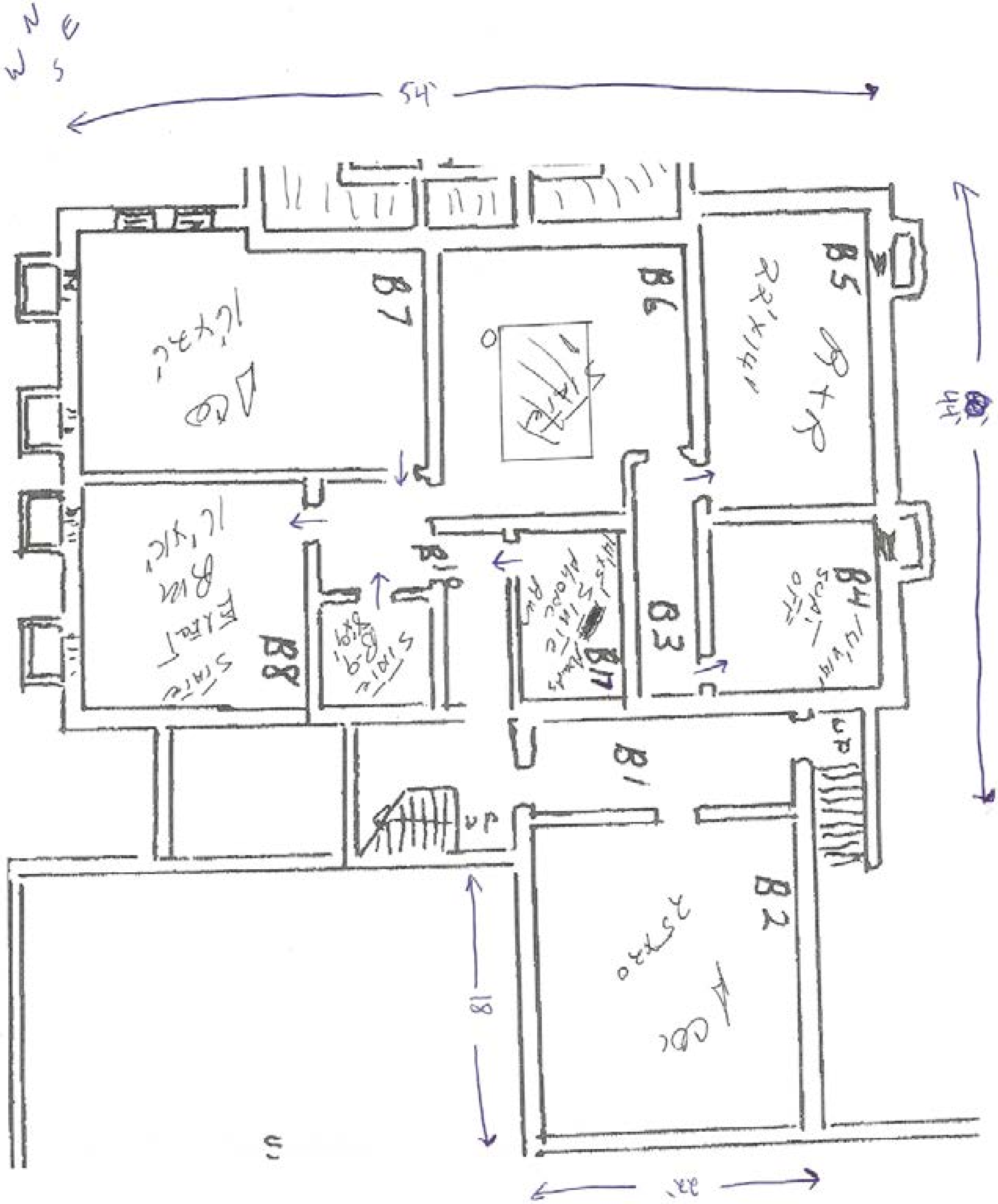
Non-Responsive

Principal
Bonus Environmental, LLC

Troy-South Lake Avenue RC_12_Report.docx

Appendix A

Shop Diagram and Air Flow Patterns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B1
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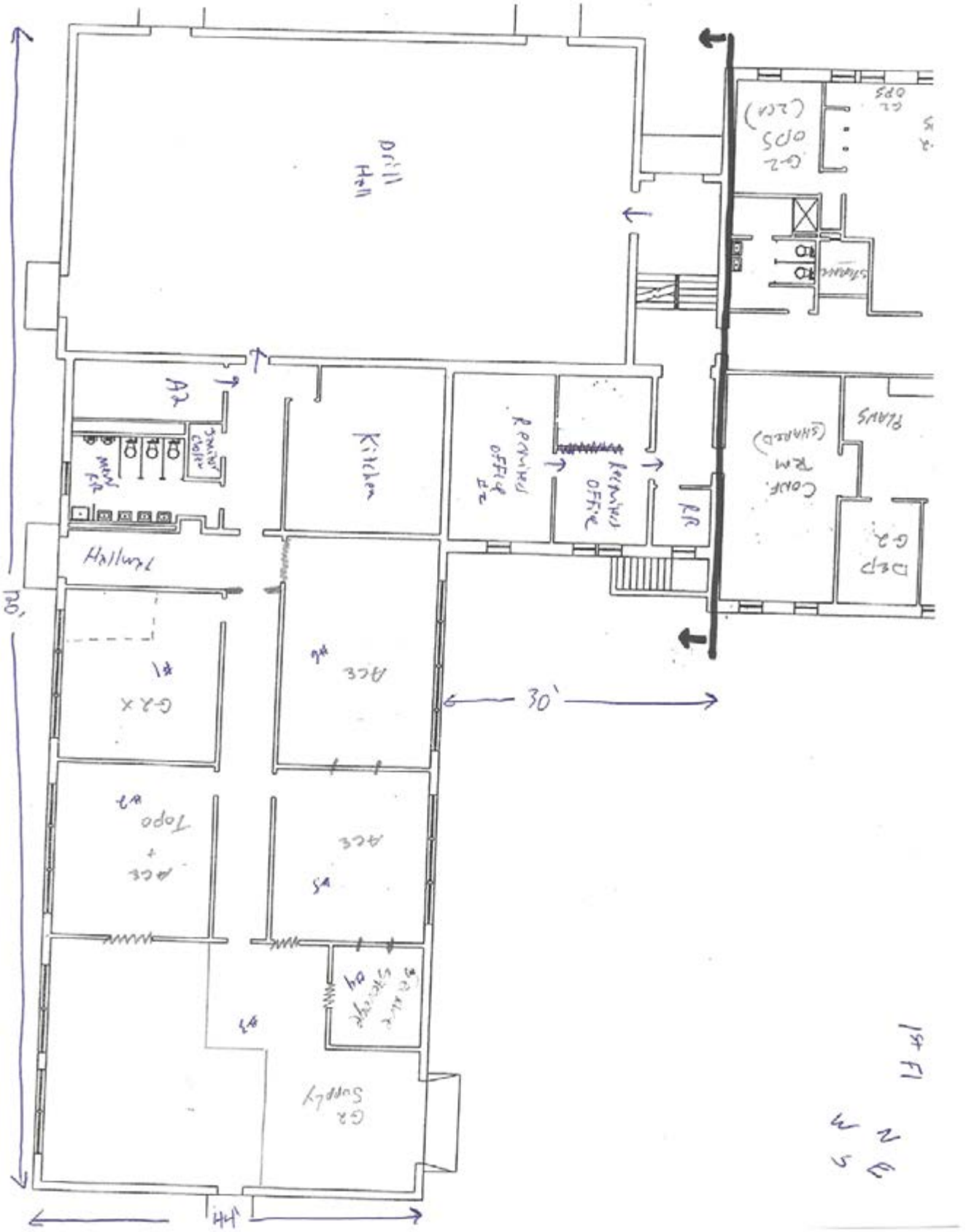

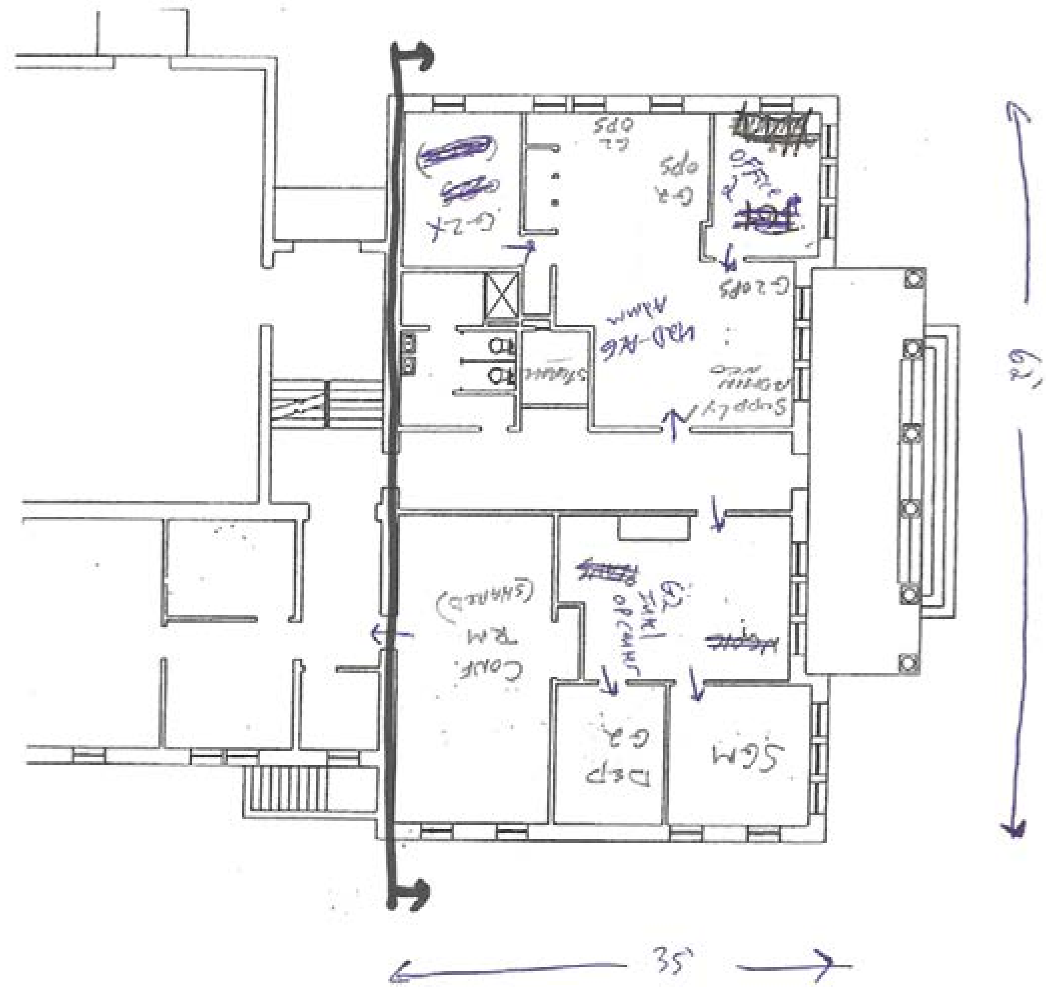
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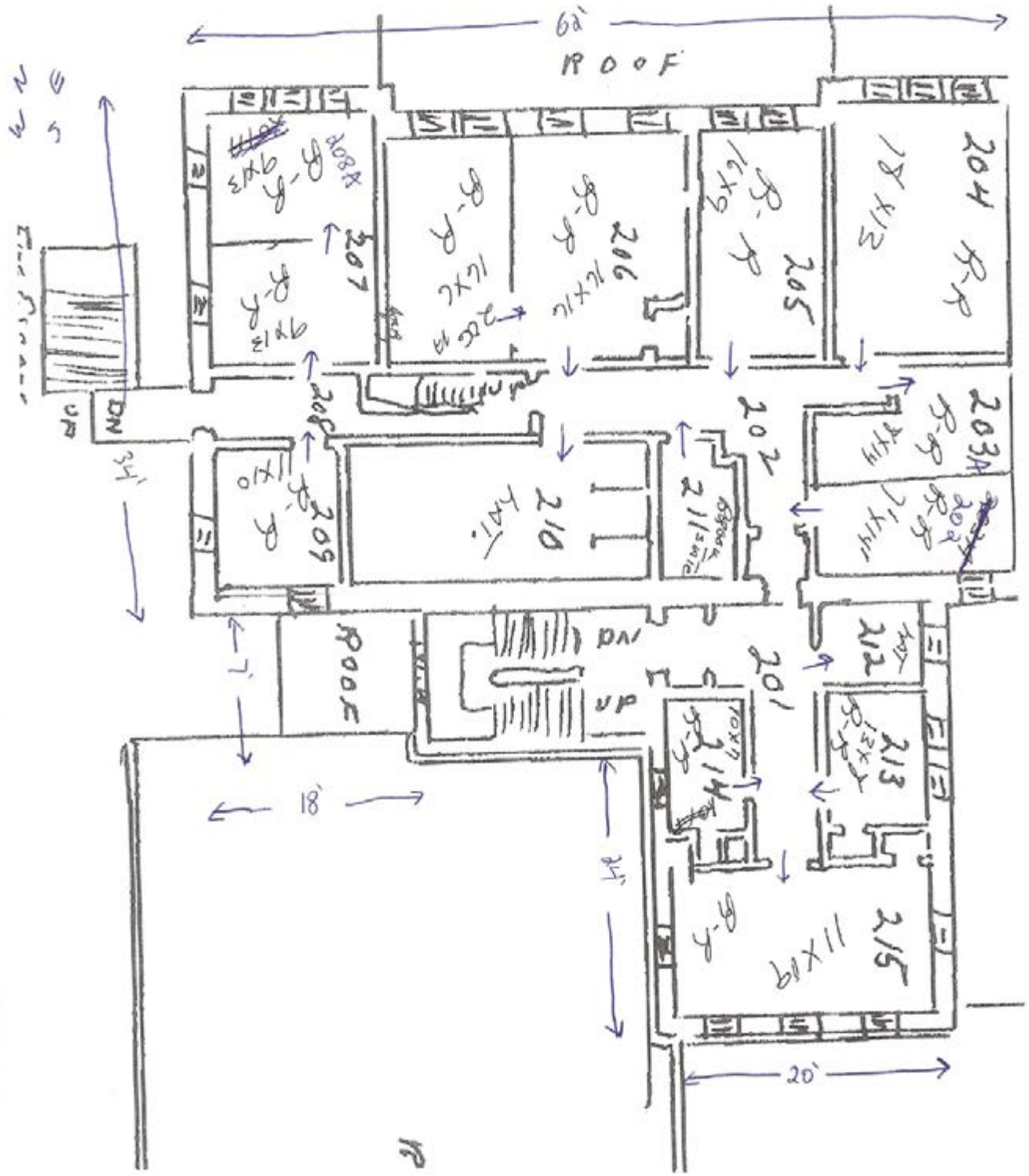
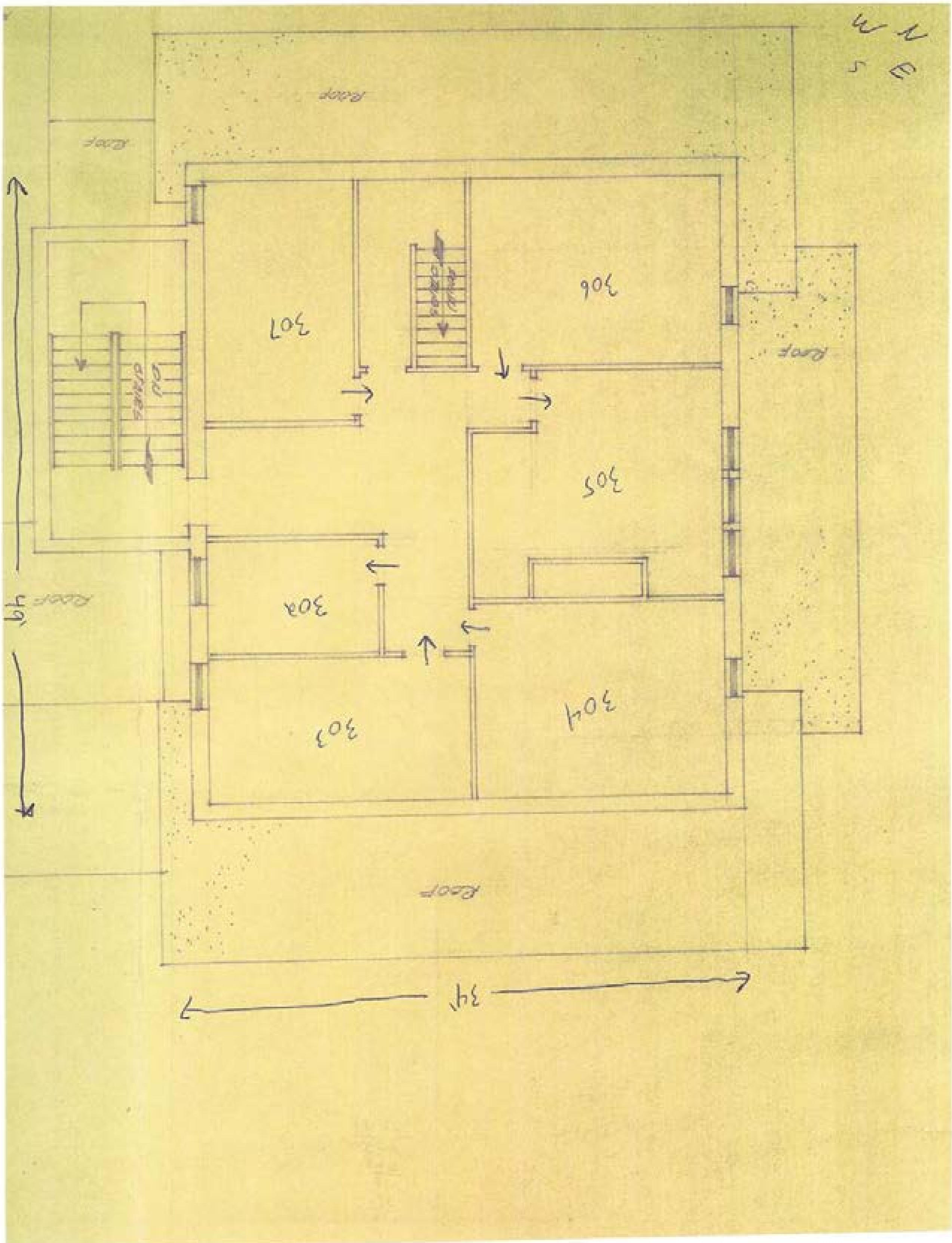
SGM
Supply

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307
306
305
304
303
302
49'
34'

Appendix B

Lead Sample Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Troy RC	Chain Of Custody:	514426
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Troy, NY	Date Submitted:	11/6/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/13/2012 Report Date: 11/14/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13011895	TroyRC-PC-1	Flame	Paint Chip	****	N/A	0.0078	%Pb		7.1	%Pb	
13011896	TroyRC-PC-2	Flame	Paint Chip	****	N/A	0.006	%Pb		1.2	%Pb	
13011897	TroyRC-PC-3	Flame	Paint Chip	****	N/A	0.0081	%Pb		5.2	%Pb	
13011898	TroyRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13011899	TroyRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011900	TroyRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	110	1000	ug/ft²	
13011901	TroyRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	14	130	ug/ft²	
13011902	TroyRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011903	TroyRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011904	TroyRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	53	480	ug/ft²	
13011905	TroyRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	140	1200	ug/ft²	
13011906	TroyRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011907	TroyRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011908	TroyRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011909	TroyRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011910	TroyRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	64	580	ug/ft²	
13011911	TroyRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	43	390	ug/ft²	
13011912	TroyRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011913	TroyRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Troy RC	Chain Of Custody:	514426
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Troy, NY	Date Submitted:	11/6/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/13/2012 Report Date: 11/14/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13011914	TroyRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13011915	TroyRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	22	200	ug/ft²	
13011916	TroyRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft²	27	250	ug/ft²	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

An Non-Responsive

Technical Manager: Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.
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AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514426

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Troy RC
2. Job Location: Troy, NY
3. Job #: 1061-15 P.O. #: W912K6-09-A-0003
4. Contact Perso [redacted] @ phone #
5. Submitted by: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: [redacted] @ bonusenvironmental.com
Comments:	☐ 2 Day Date Due: N/A	☐ Fax: [redacted] @us.army.mil
	☐ Results Required By Noon	☐ Verba [redacted] @us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)
TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 3 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 19 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER/ OTHER	SWAB/ TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
TroyRC-PC-1	Green Pnt	11-5-12					X			X						Date/Time: Contact: By:
-2	White Pnt						X			X						
-3	Blue Pnt						X			X						
*SEE ATTACHED FIELD DATA SHEETS			X													
TroyRC-ASB-1	Rm [redacted] B7	11-5-12				X				X						Date/Time: Contact: By:
TroyRC-LW-1→							X				X					
																Date/Time: Contact: By:

[redacted]

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 11/6 / 12 @ 1000 Via: Fed Ex By (Print): [redacted]
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 7936 2456 3546

Surface Sampling Field Data Sheet

Date Collected: 11-5-12
Job Number: 1061-15
Contact Pers: Non-Responsive

Job Name: Troy RC
Job Location: 99 S. Lake Ave.
Address: Troy, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
TroyRC-LW-1	Field blank	—	—	Ghost wipe
-2	Drill Hall	center, on floor	4"x4"	
-3		west corner, on heater Fin		
-4		South corner, top of Pay Phone		
-5		East wall, top of AED case		
-6		East corner, top of locker		
-7	Kitchen	East corner, top of mixing Machine		
-8	Rm B7	top of Locker, North corner of Rm		
-9	Conf Rm	on SW window Sill		
-10	1st Fl. Hallway	on mail desk		
-11	DEP G2 office	top of bookshelf		
-12	420-ACE Admin Area	top of copy Machine		
-13	Rm 215	radiant heater on ~~[illegible]~~		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Surface Sampling Field Data Sheet

Date Collected: 11-5-14
Job Number: 1061-15
Contact Per: Non-Responsive
Job Name: Troy RC
Job Location: 99 S. Lake Ave.
Address: Troy, NY
Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
TroyRC-LW-14	Rm 208	on east window sill	4" x 4"	Ghost wipe
-15	Rm 204	top of bookshelf		
-16	Rm 209	top of microwave		
-17	Rm 303	top of television		
-18	Rm 305	on light fixture		
-19	Rm 307	on window sill		

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Appendix C

Asbestos Bulk Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	Job Name:	Troy RC	Chain Of Custody:	514426
Address:	301-IH Old Bay Lane, Attn: ARNG-CIG-P, State Military Reservation	Job Location:	Troy, NY	Date Analyzed:	11/12/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13011917	TroyRC-Asb-1	NAD	--	--	--	--	--	--	10	--	--	90	DW	Multi	Layered	SW	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director Non-Responsive

Analyst(s) Non-Responsive

NVLAP (101143-0) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

Bulk Sampling Survey Sheet

Date Collected: 11-5-12
Job Number: 1061-15
Contact Pers [redacted]

Job Name: Troy RC
Job Location: 99 S. Lake Ave.
Address: Troy, NY

Page 1 of 1
Company: Bonus Environmental, LLC
Phone Number: 989-779-7186
Collected By [redacted]
COC Number:

Sample Number	Homogenous Area ID	Type of Material	Sample Location	Friable	Condition of Material	Accessibility	Photo	Comments
Troy RC-ASB-1	misc	Drywall	Rm 88, ceiling	☐ Yes ☒ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☒ Low ☐ Medium ☐ High	☒ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	

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AMA Analytical Services, Inc.
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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514426

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Troy RC
2. Job Location: Troy, NY
3. Job #: 1061-15 P.O. #: W912K6-09-A-0003
4. Contact Pers[redacted]
5. Submitted b[redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-D[redacted] on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due: ____ ☐ 24 Hours Time Due: ____ Comments: ____	☐ Immediate ☐ Next Day ☐ 2 Day ☐ 3 Day ☒ 5 Day Date Due: 11/13/12 ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report [redacted] ☒ Email: [redacted] bonusenvironmental.com ☒ Fax: [redacted] us.army.mil ☒ Verbal [redacted] us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.6 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area) Dust D6480-99 ____ (QTY)
TEM Water
☐ Qual. (pres/abs) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)
☒ All samples received in good condition unless otherwise noted.
(TEM Water samples ____ °C)
If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 3 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 19 (QTY)
☐ *Pb Air ____ (QTY)
☐ Pb Soil/Solid ____ (QTY)
☐ Pb TCLP ____ (QTY)
☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Pb Furnace (Media ____) ____ (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ____
Collection Media ____
☐ *Spore-Trap ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
☐ *Surface Swab ____ (QTY) ☐ Culturable ID Genus (Media ____) ____ (QTY)
☐ *Surface Tape ____ (QTY) ☐ Culturable ID Species (Media ____) ____ (QTY)
☐ Other (Specify ____) ____ (QTY)

*It is recommended that blank samples be submitted with all air and surface samples

CLIENT ID #	SAMPLE LOCATION/ID	DATE/TIME	VOL (L)/Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
TroyRC-PC-1	Green Paint	11-5-12					X			X						Date/Time: Contact: By:
-2	White Paint	↓					X			X						
-3	Blue Paint	↓					X			X						
X SEE ATTACHED FIELD DATA SHEETS			X													
TroyRC-ASB-1	Rm B7	11-5-12				X				X						Date/Time: Contact: By:
TroyRC-LW-1 →		↓					X				X					
																Date/Time: Contact: By:

[redacted]

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 11/6/12 @ 1000 Via: FedEx By[redacted]
2. Date/Time Analyzed: 11/12/12 @ By (Print): SUVA[redacted]
3. Results Reported To: [redacted] Date: 11/12/12 Time: ____ Initials: SV
4. Comments: [redacted]

Appendix D

Photographs

Building exterior, looking east

Drill Hall

Kitchen

Room B5, water-damaged concrete floor

Basement pump room, peeling green paint

Room B8, peeling white paint

Room B7, damaged drywall ceiling

Room 305, water-damaged metal ceiling

Room 42D-ACE area, office 2, peeling blue paint

1st floor men's rest room (near kitchen), moldy dropped-ceiling tile

Appendix E

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct 2011.

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002.

Consolidated Safety Services

The New York State Armory
Utica, New York 13501

Submitted to:

National Guard Region North
Industrial Hygiene Office
301-IH Old Bay Lane
Havre de Grace, Maryland 21078

NATIONAL GUARD ARMORY
INDUSTRIAL HYGIENE EVALUATION

Consolidated Safety Services, Inc.
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Fairfax, Virginia 22030
703-691-4612
703-691-4615 Facsimile
800-888-4612 Toll free
www.consolidatedsafety.com

The New York State Armory
Utica, New York 13501

Industrial Hygiene Evaluation

Prepared for:

National Guard Region North Industrial Hygiene Office
Havre de Grace, Maryland 21078

Prepared by:

Consolidated Safety Services, Inc.
10301 Democracy Lane, Suite 300
Fairfax, Virginia 22030

July 10, 2008

Prepared by: _____

Non-Responsive
Industrial Hygienist

Reviewed by: _____

Non-Responsive, CIH, CSP
Senior Project Manager, EHS

TABLE OF CONTENTS

Tables

Appendices

1. EXECUTIVE SUMMARY

Consolidated Safety Services, Inc. (CSS) was contracted by the U.S. Army National Guard to perform an industrial hygiene evaluation at the Utica New York State Armory located at 1700 Parkway East in Utica, New York 13501 Non-Responsive performed the evaluation on July 10, 2008. The point of contact for the facility was Mr. [redacted], Maintenance Assistant. The purpose of the evaluation was to assess industrial hygiene concerns in the facility, evaluate workers' personal exposures, and review industrial hygiene and safety programs.

The following industrial hygiene and safety programs were evaluated during the site visit: confined space, hearing conservation, respiratory protection, hazard communication (HAZCOM), and personal protective equipment (PPE).

The following industrial hygiene concerns were evaluated during the site visit:

- Noise exposure;
- Illumination;
- Deteriorated suspect lead-based paints;
- Damaged suspect asbestos-containing materials;
- Water damage and possible mold growth;
- General housekeeping;
- Indoor air quality; and
- Ergonomics.

There were several industrial hygiene concerns identified during the assessment. The Risk Assessment Code (RAC) is presented for each identified concern or deficiency:

- Suspect asbestos-containing pipe insulation was noted in the atrium area of the facility. The insulation, which is green and is located on the fittings for the pipes, is in very good condition. The insulation should be considered asbestos-containing until sampling is conducted to prove otherwise. The condition of the pipe fitting insulation should be maintained in good condition. Housekeeping and maintenance personnel should be advised of the presence of the suspect asbestos-containing material. (**RAC 4**). **1910.1001(j)(7)(iv)** and **29 CFR 1960.8a**

- There are several locations where the measured illuminance levels are below those recommended by the Illuminating Engineering Society of North America. Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels (**RAC 4**). **ANSI/IESNA RP-1-04 (Office Lighting) and ANSI ANSI/IESNA RP-7-01 (Lighting Industrial Facilities)**

- Housekeeping was good overall throughout the facility, with the exception of the stored items in the old supply room. Items (unit equipment, boxes, etc.) in these areas were stored in disarray and in some cases obstructed access to emergency exits. It is recommended that this area be organized so equipment and other items in storage are not obstructing pedestrian aisles. In addition, a fire extinguisher located in the atrium area was stored on top of a flammable cabinet. The fire extinguisher should be mounted to the wall in an accessible location. (**RAC 5**) **1910.22(a)(1)**

- There is one location in the Atrium where a lead dust wipe samples was above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). This area should be cleaned to eliminate the lead dust contamination. Anyone that may perform work in this area, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust (**RAC 4**). **NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$)**

- Detectable levels of lead were found in all eight paint chip samples collected and therefore considered to be lead-containing paint. OSHA requires that precautions be taken when lead is present, but does not define a threshold concentration below which no action is required. Therefore, anyone that may perform repair or maintenance activities to any surfaces in these areas must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead-containing paint. The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. There are two locations where peeling paint samples contained levels of lead that were above the HUD criteria of 0.5% lead by weight (**RAC 4**). **Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62 and Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing**.

- Some Indoor relative humidity measurements were in excess of the maximum humidity level of 60% recommended by ASHRAE for the control of microbial growth. Humidity levels should be reduced in areas with levels in excess of 60% (**RAC 4**). **ASHRAE Standard 62.1-2004**

- There was visual evidence of minor water damage to several suspended ceiling tiles and fixed ceilings throughout the facility. In addition, a water damaged carpet and evidence of water infiltration through a wall were noted. There was no evidence of suspect mold growth identified in the facility. The sources of the water intrusion should be identified and corrected and water-damaged ceiling tiles should be replaced to minimize the potential for mold growth. (**RAC 5**). **29 CFR 1960.8a**

2. INTRODUCTION

Consolidated Safety Services, Inc. (CSS) was contracted by the U.S. Army National Guard (USARNG) to perform an industrial hygiene evaluation at the Utica New York State Armory at 1700 Parkway East in Utica, New York. Non-Responsive performed the evaluation on July 10, 2008. The point of contact for the facility was Mr. Non-Responsive, Maintenance Assistant. The purpose of the evaluation was to review industrial hygiene and safety programs, evaluate potential exposures to physical and chemical hazards, and evaluate exposure control strategies and equipment. The building was visually inspected and evaluated for: damaged suspect asbestos-containing materials (ACM), water-damaged building materials, possible mold growth, housekeeping, deteriorated suspect lead-based paints, and poor indoor air quality.

The Utica New York State Armory currently has three units assigned to the facility: HQ-2-108 INF, HHC 2-108 INF, and 107 MP Company. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations. The building that houses the Utica New York State Armory was constructed in 1929 and consists of multiple offices, conference rooms, break rooms, men's and women's restrooms, locker rooms, supply areas, and a drill hall. An addition was added onto the original building in 2005 and 2006. A separate garage is located on the property and is used for storage and to park vehicles.

The findings, discussion and interpretation of results are provided in Section 4 through Section 8. The conclusions are provided in Section 9. A diagram of the building layout is provided in Appendix A. Sampling sheets and laboratory results for Lead Paint, Lead in Air, and Lead dust are provided in Appendix B. Selected photographs taken during the evaluation are provided in Appendix C. An explanation of how the Risk Assessment Code (RAC) was determined is located in Appendix D. A list of references used during the evaluation is provided in Appendix E.

This report is for the sole use of the USARNG. The results presented in this report are only indicative of conditions during the time of the evaluation. This evaluation does not purport to include all occupational hazards at this facility, and only those areas and exposures specifically mentioned were evaluated.

3. EVALUATION METHODS

3.1 *Noise Survey*

Sound pressure levels were measured using a Casella sound level meter. The sound level meter was calibrated before and after the survey period using a Casella CEL acoustical calibrator, factory calibrated in October 2007.

3.2 *Illumination*

Illumination measurements were taken using a Cal-Light 400, calibrated on February 22, 2008, and compared to the American National Standards Institute/Illumination Engineering Society of North America (ANSI/IESNA) Standard RP-1-04 (Office Lighting) and ANSI/IESNA Standard RP-7-01 (Lighting Industrial Facilities).

3.3 *Indoor Air Quality Measurements*

Indoor air quality parameters (i.e., carbon dioxide concentration, carbon monoxide concentration, temperature and relative humidity) were measured using a TSI Q-Trak Plus Model 8554, calibrated in January 2008. Carbon dioxide, temperature and relative humidity measurements were compared to the recommended levels established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). CO levels were compared to Occupational Safety and Health Administration Permissible Exposure Limit, the American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV) for CO and the Environmental Protection Agency's National Ambient Air Quality Standard (NAAQS) for CO.

4. OPERATIONS DESCRIPTIONS

4.1 *Facility Operations*

There are currently three units assigned to the facility: HQ-2-108 INF, HHC 2-108 INF, and 107 MP Company. The operations conducted at the facility are primarily administrative activities, equipment maintenance and storage, and training in preparation for potential deployment for combat operations.

4.1.a. Noise Measurements

A sound level survey was performed to determine if there were any hazardous noise areas at the facility that could possible result in exposures to personnel in excess of the Permissible Noise Dose. Sound pressure levels were measured throughout the facility. No noise generating equipment was noted at the facility. Measurements ranged from 61 dBA to 73 dBA within the facility. Exposure to sound pressure levels of this magnitude would not result in exposures equal to or in excess of the Permissible Noise Dose over an eight hour period.

4.1.b. Lighting Survey

Illumination levels were measured in all areas within the facility. The measurements indicate that several areas did not meet the illuminance levels recommended by the Illuminating Engineering Society of North America. The measurement results are presented in Table 1.

4.1.c. Additional Information

N/A

4.1.d. Recommendations

Illumination should be improved in deficient areas by replacing burned-out lamps, cleaning fixtures, relocating detailed work to more illuminated areas, and opening window blinds. If illuminance levels still remain deficient, additional light sources should be provided to achieve the recommended illuminance levels.

5. PHYSICAL CONDITION OF THE FACILITY

5.1 *Visual Inspection – Peeling Paint – Lead*

A visual inspection was performed to determine if any areas of peeling or deteriorated paint at the facility could pose a lead exposure hazard. There were seven areas identified where paint was peeling and may result in a potential exposure hazard. These areas include a first floor hallway door frame, the first floor stairwell door, the old supply room, the old club room, the old firing range, room 219, and the basement boiler room. Eight paint chip samples were collected and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) Method 7420.

The results, presented in Table 3, indicated detectable levels of lead were present in all of the samples collected. The paint is therefore considered to be lead-containing paint. All construction activities that involve lead-containing coatings are regulated by the Occupational Safety Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62. The standard currently does not define a specific concentration of lead, which must be present within paint for it to be considered "lead-containing." Therefore, painted and glazed surfaces that contain detectable concentrations of lead must be handled in accordance with the OSHA Lead in Construction Standard. Anyone performing work that could impact paint films or glazing that have detectable concentrations of lead must be informed of the testing results, and must take appropriate actions to comply with OSHA Standard 29 CFR 1926.62. These appropriate actions include performing air monitoring to measure worker exposure; assuring that the workers are provided with adequate respiratory protection; and assuring that workers are provided with appropriate training.

The Department of Housing and Urban Development (HUD) defines lead-based paint as having greater than 0.5% lead by weight. The peeling black paint on the first floor hallway door frame and the brown peeling paint from the first floor stairwell door contained more than 0.5% lead by weight and are therefore considered lead-based paint.

5.2 *Visual Inspection – Dust – Lead*

Due to concerns with lead contamination, wipe samples were collected from various surfaces throughout the facility. Nineteen samples were collected from the walls, floors, and other surfaces. The samples were collected using “Ghost Wipes” using the prescribed NIOSH method for conducting surface wipe samples. The samples were collected and placed in new plastic containers and submitted to AMA Analytical Services, Inc. to be analyzed in accordance with Environmental Protection Agency (EPA) 600/R-93/200 Lead in Surface Wipe Samples. The results for the wipe samples, presented in Appendix B indicate that there was one sample collected from the Atrium that was above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). It is recommended that this area be cleaned to eliminate the lead dust contamination. Anyone that may perform work in this area, including repair or maintenance activities, must be made aware of the lead contamination and appropriate precautions be taken to minimize exposures to the lead contaminated dust. Note: The Old Firing Range has reportedly been properly cleaned and now functions as a ventilation room. The four samples from the Old Firing Range were below the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$).

5.3 *Visual Inspection – Asbestos*

A visual inspection was performed to determine if there was any suspect asbestos-containing material (ACM) at the facility and its condition. Pipe fittings were identified in the Atrium (See Photo 3). Based on observation, it appears that the pipes are not normally accessible, and therefore not normally subject to damage. All fittings were in good condition and no samples were collected. These fittings should be presumed to contain asbestos unless sampling is conducted to prove otherwise. It is recommended that anyone conducting work on any asbestos-containing material or presumed asbestos-containing material be made aware of the asbestos and the appropriate precautions be taken to minimize exposures. The condition of the pipe insulation should be monitored on a routine basis to insure that the materials are not damaged.

5.4 *Visual Inspection – Water Damage and Mold Growth*

A visual inspection was performed to determine if there was any water damage or visible mold growth at the facility. There was no evidence of mold growth, but some evidence of minor water damage to several suspended ceiling tiles in the mess hall, 1st floor administration office, office 160, office 219, and room 202. Evidence of water damaged fixed ceilings were noted in office 219, room 208a and room 214. Evidence of water infiltration through a wall was noted in the old firing range. In addition, a water soaked carpet was observed in office 219. The sources of the water intrusion should be identified and corrected and water-damaged ceiling tiles should be replaced to minimize the potential for mold growth.

5.5 *Visual Inspection – Housekeeping*

A visual inspection was performed to assess the state of housekeeping in the facility. Housekeeping was good overall, with the exception of stored items in the old supply room. Items (unit equipment, boxes, etc.) in these areas were stored in disarray and in some cases obstructed access to emergency exits. It is recommended that these areas be organized so that equipment and other items in storage are not obstructing pedestrian aisles. In addition, a fire extinguisher was located on-top of a flammable storage locker in the Atrium and should be mounted to the wall.

6. BUILDING CONCERNS

6.1 *Ergonomic Concerns*

Interviews of employees were conducted and observations made to determine if there were work activities that result in any ergonomic concerns in the facility. No ergonomic concerns were identified.

6.2 *Illumination Issue*

Illumination levels were measured in all areas of the facility and the results indicate that some illuminance levels do not meet the levels recommended by the Illuminating Engineering Society of North America. The measurements ranged from a low of 8 foot candles (fc) to a high of 104 fc. The

complete results of the evaluation can be found in Table 1, including whether or not the measured levels met ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilities) recommendations for illumination.

6.3 *Indoor Air Quality (IAQ)*

Temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) were evaluated in the facility and compared with recognized "comfort factors." Currently, there are no enforceable regulatory IAQ standards. However, ASHRAE defines acceptable IAQ as air (1) in which there are no known contaminants at harmful levels, as determined by cognizant authorities, and (2) about which a substantial majority (80% or more) of the people exposed do not express dissatisfaction. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality," represents the state-of-the-art in ventilation design requirements for commercial, institutional, and residential buildings. It was developed "to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to minimize the potential for adverse health effects." The standard also considers chemical, physical, and biological contaminants and other factors that impact IAQ and affect occupant health and comfort.

A digital IAQ meter (TSI Q-Trak Plus, model #8554) was used to collect temperature, relative humidity, CO_2, and CO measurements in several areas throughout the facility. Results are provided in Table 2. These measurements were compared with current ASHRAE consensus standards and were found to be within acceptable limits.

6.3.a. Carbon Dioxide (CO_2)

Building occupants generate CO_2 as a product of respiration. Concentrations of CO_2 are often used during indoor air quality investigations to determine the effectiveness of ventilation systems in removing common indoor pollutants. The indoor CO_2 concentration will increase in a given space with fixed ventilation output in proportion to the number of building occupants and their activity level. ASHRAE Standard 62.1-2004 uses CO_2 as a surrogate indicator of building ventilation; namely, an indoor-outdoor CO_2 concentration differential of less than 700 parts per million (ppm) is considered to indicate adequate ventilation. This level is not considered an indication of a health risk, but rather an indicator for human comfort.

Indoor levels of CO_2 ranged from 278 parts per million (ppm) in the boiler room to 620 ppm in the kitchen. Outdoor CO_2 levels were approximately 305 ppm during the monitored period. The indoor CO_2 levels were less than 1005 ppm (the outdoor CO_2 levels plus 700 ppm), which indicates adequate ventilation.

6.3.b. Carbon Monoxide (CO)

The Occupational Safety and Health Administration has established a Permissible Exposure Limit for carbon monoxide of 50 ppm averaged over an eight-hour work day. Similarly, the American Conference of Governmental Industrial Hygienists has established a Threshold Limit Value of 25 ppm averaged over an eight-hour work day. The CO measurements in the facility ranged from 0.9

ppm to 3.6 ppm. These levels are well below established occupational exposure limits and CO does not present a hazard to employees at this facility.

6.3.c. Temperature

Indoor temperature measurements in the facility ranged from 74ºF in the drill hall to 79.5ºF in the basement classroom. Most of the temperature measurements were on the upper end or slightly above the acceptable temperature ranges according to ASHRAE. No central air conditioning exists at the facility.

6.3.d. Relative Humidity

Indoor relative humidity (RH) measurements ranged from 39% in the boiler room to 67% in the drill hall. Although relative humidity levels were not considered hazardous in the locations surveyed, some areas were in excess of the maximum humidity level of 60% recommended by ASHRAE for the control of microbial growth. Elevated humidity levels (60% or greater) alone will not ensure the microbial growth such as mold. A moist nutrient source (including sheetrock and suspended ceiling tiles that have become wet through roof leaks, pipe bursts, etc.) and elevated temperatures are also required for mold growth. Humidity levels should be reduced in areas with levels in excess of 60%.

Acceptable Ranges of Temperature and Relative Humidity during Summer and Winter Months (in degrees Fahrenheit (ºF))		
Relative Humidity	**Winter Temperature**	**Summer Temperature**
30%	68.5 – 76.0	74.0 – 80.0
40%	68.5 – 75.5	73.5 – 79.5
50%	68.5 – 74.5	73.0 – 79.0
60%	68.0 – 74.0	72.5 – 78.0
• The humidity level should be maintained below 60% to reduce microbial problems • The humidity level should be maintained above 30% to prevent irritation of sinus linings, which can lead to sinus problems		

6.3.e. Lead Air Sampling

Due to concerns with lead contamination, air samples were collected from two areas in the facility: the recruiting office and the unit administration office. The samples were collected using SKC brand personal sampling pumps with the appropriate sampling media. Pumps were calibrated both before and after use with a Dry-Cal calibrator, which is considered a primary standard. General area samples were collected as close to breathing zone height as could be achieved. The samples were shipped to AMA Analytical Services, Inc. and Analysis was conducted in accordance with the Environmental Protection Agency (EPA) 600/R-93/200 Lead in Air Samples. The results from the air samples collected over the 7.8 hour period were compared directly to the OSHA PEL, which is based on an 8-hour Time-Weighted Average, because the airborne concentration of lead is not expected to change in the office areas sampled. Both air samples were below the limit of detection of 3.2 micrograms per cubic meter, and therefore well below the OSHA PEL and ACGIH TLV.

7. INDUSTRIAL HYGIENE AND SAFETY PROGRAMS

An evaluation was performed to determine the applicability of the following programs:

- Confined Space;
- Hearing Conservation;
- Respiratory Protection;
- Hazard Communication (HAZCOM); and
- Personal Protective Equipment (PPE).

It was determined that all industrial hygiene and safety programs are managed at the unit level and there are no specific facility based programs according to the Maintenance Assistant. Based on the observed conditions and reported operations at the facility, Hazcom and PPE programs would be required for personnel at this facility. A separate garage was located on the property and was only used for storage and parking vehicles. No maintenance activities were reportedly performed in the separate garage.

8. VEHICLE, EQUIPMENT AND HAZARDOUS MATERIALS LIST

The use of the items on the equipment and hazardous materials lists were evaluated and it appears that all the items are used at the facility. The Material Safety Data Sheets (MSDS) were in order and all chemicals found in the facility were listed in the materials list (or chemical inventory) at the beginning of the MSDS notebook. According to the Maintenance Assistant there are no vehicles assigned specifically to the facility. All vehicles at the facility are assigned to specific units for the use only.

9. CONCLUSION

Industrial hygiene concerns associated with some minor water damage to several suspended ceiling tiles, fixed ceilings, and a carpet was identified at the facility. Illumination levels were low in some areas of the facility. One lead dust wipe sample was above the NGB Region North IH Office limit of 200 micrograms/square foot ($\mu g/ft^2$). Detectable levels of lead were found in eight lead paint chip samples from seven locations. Some minor housekeeping problems were identified. Suspect asbestos-containing materials were identified in the atrium of the facility. Some indoor relative humidity measurements were in excess of the maximum humidity level of 60%. These concerns are discussed in Sections 4 through Section 8.

Tables

Table 1. Illumination Measurements
The New York State Armory
Utica, New York
Date of Sampling: July 10, 2008

Location	Luminance (fc)[1]	Standard (fc)	Standard Met (Y/N)
Drill Hall	20 - 48	30	N
Mess Hall	63 - 79	30	Y
First floor Men's Room	24 – 28	30	N
Gym (Room 114)	34 – 36	30	Y
Office (Room 116)	41 – 80	30	Y
First Floor Women's Room	28 – 36	7	Y
First floor Hallway	8 – 32	30	N
Fitness Center (Room 181)	31	30	Y
Men's Locker Room 175	39 – 54	30	Y
Classroom 150	40 – 65	30	Y
Break Room 152	46 – 52	10	Y
Mechanical Room 145	59 – 79	30	Y
Classroom 148	62 – 80	30	Y
Janitor Closet (Room151)	62	7	Y
Maintenance Office	47 – 50	30	Y
Administration Office (first floor)	60 – 70	30	Y
Office 160	41	30	Y
Office 159	42	30	Y
Conference Room 158	70	30	Y
Kitchen	63 – 70	50	Y
Old Supply Room	8 – 15	30	N
SGT Non-Responsive office	30 – 35	30	Y
SGT Non-Responsive office	25- 26	30	N
Old Club Room	30 – 48	30	Y
Old Conference Room 104B	14 – 18	30	N
Room 105	30 - 40	30	Y
Old Firing Range	30 - 90	30	Y
Office 219	53 – 54	30	Y
Office 221	17 – 18	30	N

Table 1. Illumination Measurements
The New York State Armory
Utica, New York
Date of Sampling: July 10, 2008

Location	Luminance (fc)[1]	Standard (fc)	Standard Met (Y/N)
Office 217	80	30	Y
Office 206B	75 – 104	30	Y
Room 201	36 - 37	30	Y
Office 202	43	30	Y
Office 213	46	30	Y
Office 208A	56	30	Y
Office 214	62	30	Y
Boiler Room	15 – 18	30	N
Basement Classroom	40 – 61	30	Y
Separate Garage	15-35	75	N

[1] fc = foot candles

The readings were taken with a Cal-Light 400, factory calibrated on February 22, 2008.

The standards listed in Table 1 are from ANSI/IESNA RP-1-04 (Office Lighting) and ANSI/IESNA RP-7-01 (Lighting Industrial Facilitie

Table 2. Indoor Air Quality Measurements
The New York State Armory
Utica, New York
Date of Sampling: July 10, 2008

Location	Occupants Present in Area	CO_2 (ppm)[1]	CO (ppm)	Relative Humidity (%)	Temperature (° F)
First Floor					
Drill Hall	5	340 - 490	1.8	56 – 67	74 - 75
Kitchen	2	550 – 620	3.6	51 – 52	78 - 79
Second Floor					
Old Firing Range	2	360 – 380	3.6	47 – 48	76 – 77
Office 219	3	390 – 410	0.9	45 – 46	78 - 79
Basement					
Boiler Room	2	278 – 350	1.4	39 – 40	77 – 78
Basement Classroom	2	350 – 400	1.2	41 – 42	79 – 79.5

CO_2, CO, relative humidity and temperature measurements were taken with a TSI Q-Trak Plus Model 8554, calibrated January 2008.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommends that the indoor CO_2 concentration be maintained at a level that is less than 700 ppm above the outdoor concentration.

National Ambient Air Quality Standard (NAAQS) recommendation for ambient CO: below 9 ppm

Occupational Safety and Health Administration Permissible Exposure Limit for CO: 50 ppm

American Conference of Governmental Industrial Hygienists Threshold Limit Value for CO: 25 ppm

Table 3. Peeling Paint Chip Sample Results
The New York State Armory
Utica, New York
Date of Sampling: July 10, 2008

Sample Number	Location	Results (%)[1]
07102008 - 31	Black peeling paint from first floor hallway door frame near gym 114	17
07102008 - 32	Brown peeling paint from first floor stairwell door	49
07102008 - 33	White peeling paint from old supply room rear wall	0.037
07102008 - 34	Cream peeling paint from old club room wall	0.013
07102008 - 35	White peeling paint from right wall in old firing range	0.012
07102008 - 36	Cream peeling paint from right wall in old firing range	0.01
07102008 - 37	Blue peeling paint from office 219 wall.	0.082
07102008 - 38	Green peeling paint from basement boiler room wall	0.07

[1] Results cited as % lead by weight

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 7420

Table 4.Lead Wipe Samples New York State Armory Utica, New York Date of Sampling: July 10, 2008				
Sample Number	**Location**	**Sample Area[1]**	**Results (µg/ft²)[2]**	**NGB Standard (µg/ft²)[3]**
07102008 - 01	Drill Hall – base of basketball hoop	12 in x 12 in	55	<200
07102008 - 02	Drill Hall – back right corner floor	12 in x 12 in	100	<200
07102008 - 03	Drill Hall – center right floor	12 in x 12 in	38	<200
07102008 - 04	Drill Hall – front left corner on ledge	12 in x 12 in	70	<200
07102008 - 05	Drill Hall – middle left floor	12 in x 12 in	44	<200
07102008 - 06	Mess Hall – radiator vent	12 in x 12 in	110	<200
07102008 - 07	Office 114 – storage cabinet top	12 in x 12 in	20	<200
07102008 - 08	First Floor Hallway – near drill hall entrance	12 in x 12 in	27	<200
07102008 - 09	Room 145 – air filter supply side	12 in x 12 in	< 12	<200
07102008 - 10	Atrium – table top	12 in x 12 in	790	<200
07102008 - 11	Kitchen – table surface	12 in x 12 in	< 12	<200
07102008 - 12	SGT Non-Responsive Office – desk	12 in x 12 in	< 12	<200
07102008 - 13	*Old Firing Range – radiator	12 in x 12 in	83	<200
07102008 - 14	*Old Firing Range – light fixture	12 in x 12 in	18	<200
07102008 - 15	*Old Firing Range – bullet trap area	12 in x 12 in	120	<200
07102008 - 16	*Old Firing Range – inside duct work (return air)	12 in x 12 in	< 12	<200
07102008 - 17	Second Floor Hallway – outside firing range	12 in x 12 in	67	<200
07102008 - 18	Basement Classroom – desk top	12 in x 12 in	180	<200
07102008 - 19	Headquarters Cubical Area (second floor) – desk top	12 in x 12 in	< 12	<200

***** The Old Firing Range has reportedly been properly cleaned and now functions as a ventilation room.

1 Sample area was 12 in x 12 in with a total sample area of 144 in^2 or at total of 1 ft^2

2 Results are presented as microgram per square feet (µg/ft2)

3 Standard is based on the NGB Region North IH office policy

AMA Analytical Services, Inc conducted the analysis in accordance with the Environmental Protection Agency (EPA) 600/R-93/200.

The sample results were compared to the NGB Region North IH Office Policy of maintaining <200 µg/ft^2

Table 5.General Area Air Samples for Lead
New York State Armory
Utica, New York
Date of Sampling: July 10, 2008

Sample Number	Location	Sample Information			Results (µg/m³) [2]
		Time Sampled (Minutes)	Flow Rate (lpm)[1]	Sample Volume (liters)	
07102008-60	Headquarters Cubical Section (second floor)	466	2	932	<3.2
07102008-61	HHC Office Area	470	2	940	<3.2
OSHA PEL (8-hour TWA)[4]					50
ACGIH TLV (8-hour TWA)[5]					50

The results from the air samples collected over the 7.8 hour period were compared directly to the OSHA PEL, which is based on an 8-hour Time-Weighted Average, because the airborne concentration of lead is not expected to change in the office areas sampled.

[1] - lpm = liters of air per minute

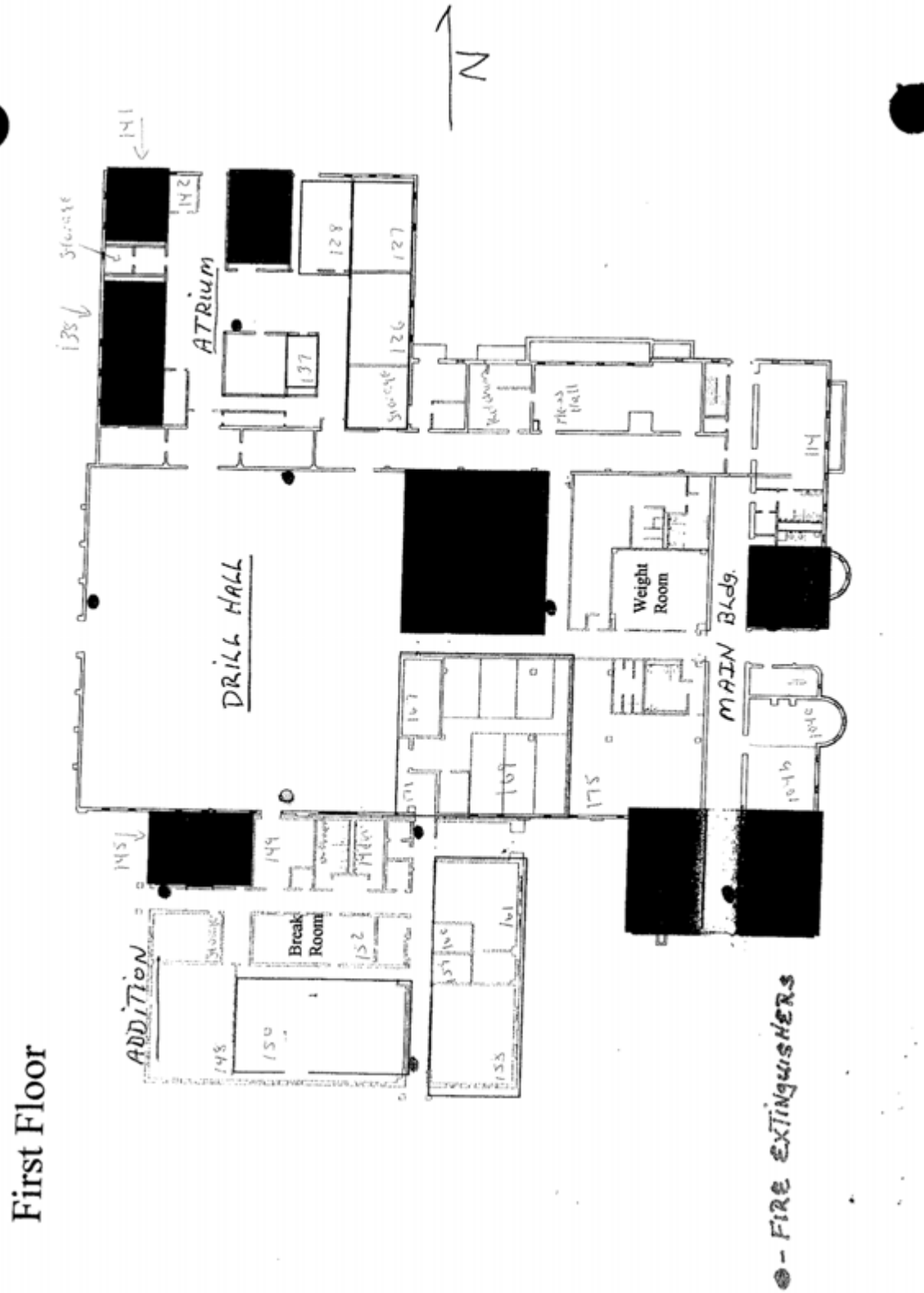
[2] - µg/m³ = micrograms per cubic meter

[3] - ND = Parameter not detected above LOD

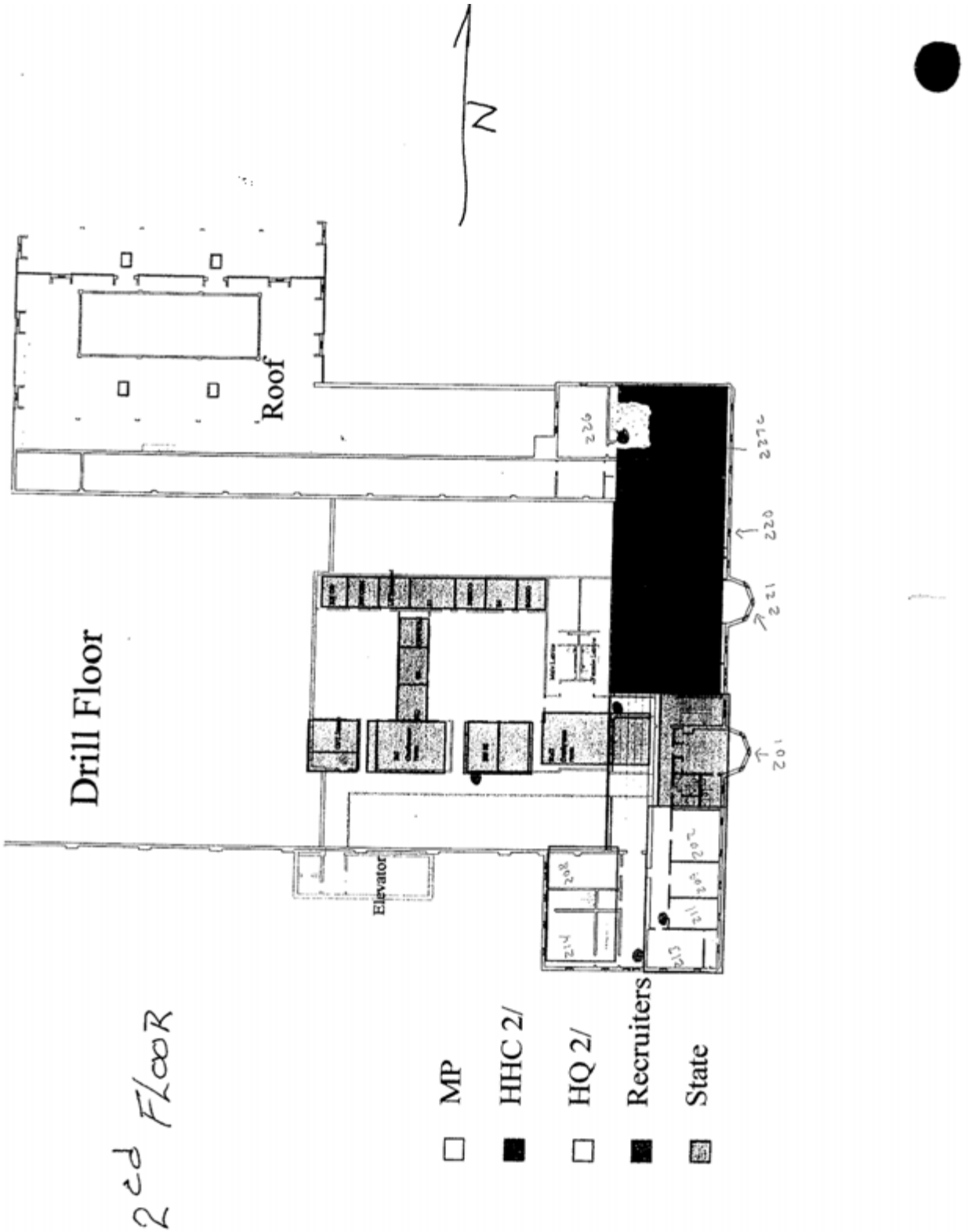
[4] - U.S. Occupational Safety and Health Administration Permissible Exposure Limit (8-hour Time-Weighted Average)

[5] - American Conference of Governmental Industrial Hygienists Threshold Limit Value (8-hour Time-Weighted Average)

Appendix A
Building Layout



First Floor



Appendix B
Sampling Sheets and Laboratory Results for Lead Paint Chip Samples, Lead Dust Wipe Samples, and Lead Air Samples

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

Utica

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 178314

Mailing/Billing Information:
1. Client Name: NGB Region North JH office
2. Address 1: 301 - JH old Bay Lane
3. Address 2: Havre De Grace, MD 21078
4. Address 3:
5. Phone #: 410-942-0273 x5 Fax #: 410-942-0251

Submittal Information:
1. Job Name: New York State Armory
2. Job Location: Utica NY
3. Job #: [redacted] P.O. #:
4. Contact Person: [redacted] 521-268-5230
5. Submitted by: [redacted] Signature [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	❑ Include Data Sheets with Report
❑ 24 Hours Time Due:	❑ Next Day ❑ 5 Day +	❑ Email: [redacted] @consolidatedlabs.com
Comments: Standard Turn Around	❑ 2 Day Date Due:	❑ Fax:
	❑ Results Required By Noon (Every Attempt Will Be Made to Accomodate)	❑ Verbals:

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
❑ NIOSH 7400 ____ (QTY)
❑ Fiberglass ____ (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
❑ AHERA ____ (QTY)
❑ NIOSH 7402 ____ (QTY)
❑ Other (specify ____) ____ (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate ____ (QTY)
❑ EPA Point Count ____ (QTY)
❑ NY State Friable 198.1 ____ (QTY)
❑ Grav. Reduction ELAP 198.6 ____ (QTY)
❑ Other (specify ____) ____ (QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield ____ (QTY)
❑ NY State PLM/TEM ____ (QTY)
❑ Residual Ash ____ (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
❑ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
❑ Quan. (s/area)Dust D6480-99 ____ (QTY)
TEM Water
❑ Qual. (pres/abs) ____ (QTY)
❑ ELAP 198.2/EPA 100.2 ____ (QTY)
❑ EPA 100.1 ____ (QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples ____ °C)

Lead Analysis
❑ Paint Chip 8 (QTY)
❑ Dust Wipe (wipe type 9 hour wipes) 19 (QTY)
❑ Air 2 (QTY)
❑ Soil/Solid ____ (QTY)
❑ TCLP ____ (QTY)
❑ Drinking Water ____ (QTY)
❑ Waste Water ____ (QTY)
❑ Dust Wipe Furnace (wipe type ____) ____ (QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap ____ (QTY) ❑ Bulk ____ (QTY)
❑ Surface Swab ____ (QTY) ❑ Surface Vacuum Dust ____ (QTY)
❑ Surface Tape ____ (QTY) ❑ Other (Specify ____) ____ (QTY)

SAMPLE INFORMATION					ANALYSIS							MATRIX					CLIENT CONTACT (LABORATORY STAFF ONLY)
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER/ LIQUID/ OTHER	SPORE TRAP	TAPE	SWAB	
071DZ008-01	Drill Hall	9/16/18		144				X				X					Date/Time: Contact: By:
-02	Drill Hall																
-03	Drill Hall																
-04	Drill Hall																
-05	Drill Hall																Date/Time: Contact: By:
-06	Mess Hall																
-07	office 114																
-08	3rd floor Hallway																
-09	Air filter																Date/Time: Contact: By:
-10	Atrium																
-11	Kitchen																

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: ____ / ____ / ____ @ ____ Via: ____ By (Print): ____ Sign: ____
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: ____ / ____ / ____ Time: ____ Initials: ____
4. Comments: ____

AMA Analytical Services, Inc.
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www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 178315

Mailing/Billing Information:

1. Client Name:
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: Fax #:

Submittal Information:

1. Job Name:
2. Job Location:
3. Job #: P.O. #:
4. Contact Person [redacted] 571-268-3230
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided a[redacted]sible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due:
❑ 24 Hours Time Due:
Comments: Standard Turn Around

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ☑ 5 Day +
❑ 2 Day Date Due:
❑ Results Required By Noon (Every Attempt Will Be Made to Accomodate)

REPORT TO:
❑ Include COC/Field Data Sheets with Report
☑ Email: [redacted] @ consolidatedsafety.com
❑ Fax:
❑ Verbals:

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)

PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)

TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Lead Analysis
☑ Paint Chip 8 (QTY)
☑ Dust Wipe (wipe type ~~Ghost wipe~~) 19 (QTY)
☑ Air 2 (QTY)
❑ Soil/Solid (QTY)
❑ TCLP (QTY)
❑ Drinking Water (QTY)
❑ Waste Water (QTY)
❑ Dust Wipe Furnace (wipe type) (QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap (QTY) ❑ Bulk (QTY)
❑ Surface Swab (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Tape (QTY) ❑ Other (Specify) (QTY)

SAMPLE INFORMATION					ANALYSIS							MATRIX					CLIENT CONTACT
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
07102008 - 12	SCT Geneva	7/10/08		1ft²				X				X					Date/Time: Contact: By:
- 13	old Firing Rg							X				X					
- 14	old Firing Rg							X				X					
- 15	old Firing Rg							X				X					
- 16	old Firing Rg							X				X					Date/Time: Contact: By:
- 17	Hallway							X				X					
- 18	Basement ClassRm							X				X					
- 19	HQ cubical Area							X				X					
07102008 - 31	Hallway Door frame							X			X						Date/Time: Contact: By:
- 32	Stairwell Door							X			X						
- 33	old supply Rm							X			X						

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: / / @ Via: By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AMA Analytical Services, Inc.
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

Utica

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 178316

Mailing/Billing Information:

1. Client Name: _____
2. Address 1: _____
3. Address 2: _____
4. Address 3: _____
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: _____
2. Job Location: _____
3. Job #: [redacted] P.O. #: _____
4. Contact Person: [redacted] @ phone # 571-264-6230
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due: _____
❑ 24 Hours Time Due: _____
Comments: _____

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day ❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)
❑ Next Day ❑ 5 Day +
❑ 2 Day Date Due: _____

REPORT TO:
❑ Inc[redacted] a Sheets with Report
☑ Em[redacted] @consolidated-safety.com
❑ Fax: _____
❑ Verbals: _____

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ NIOSH 7400_____(QTY)
❑ Fiberglass _____(QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity_____ in a 25mm 37mm
❑ AHERA _____(QTY)
❑ NIOSH 7402 _____(QTY)
❑ Other (specify_____) _____(QTY)

PLM Bulk
❑ EPA 600 – Visual Estimate_____(QTY)
❑ EPA Point Count_____(QTY)
❑ NY State Friable 198.1_____(QTY)
❑ Grav. Reduction ELAP 198.6_____(QTY)
❑ Other (specify_____) _____(QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield_____(QTY)
❑ NY State PLM/TEM_____(QTY)
❑ Residual Ash_____(QTY)

TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust_____(QTY)
❑ Quan. (s/area) Vacuum D5755-95 _____(QTY)
❑ Quan. (s/area)Dust D6480-99_____(QTY)

TEM Water
❑ Qual. (pres/abs)_____(QTY)
❑ ELAP 198.2/EPA 100.2_____(QTY)
❑ EPA 100.1_____(QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____°C)

Lead Analysis
❑ Paint Chip 6 (QTY)
☑ Dust Wipe (wipe type ghost wipes) 19 (QTY)
☑ Air 2 (QTY)
❑ Soil/Solid _____(QTY)
❑ TCLP_____(QTY)
❑ Drinking Water _____(QTY)
❑ Waste Water_____(QTY)
❑ Dust Wipe Furnace (wipe type _____) _____(QTY)

Mold - Direct Microscopic Analysis
❑ Spore-Trap _____(QTY) ❑ Bulk _____ (QTY)
❑ Surface Swab _____ (QTY) ❑ Surface Vacuum Dust _____(QTY)
❑ Surface Tape_____ (QTY) ❑ Other (Specify_____)_____(QTY)

SAMPLE INFORMATION					ANALYSIS							MATRIX					CLIENT CONTACT (LABORATORY STAFF ONLY)
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER/ WIPE/ OTHER	SPORE TRAP	TAPE	SWAB	
07102008 - 34	old Club Rm	7/10/08						X			X						Date/Time: Contact: By:
-35	old Firing Range							X			X						
-36	old Firing Range							X			X						
-37	office 219							X			X						
-38	basement Boiler Rm							X			X						Date/Time: Contact: By:
07102008 - 60	HQ Cubical Section		2L/MIN					X		X							
-61	HHC office		2L/MIN					X		X							
																	Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: ____/____/____ @ _____ Via: _____ By (Print): _____ Sign: _____
2. Date/Time Analyzed: ____/____/____ @ _____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____/____/____ Time: _____ Initials: _____
4. Comments: _____

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA ACCREDITED LABORATORY — Environmental Lead — See aihaaccap.org for details — 100470

NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	New York State Armory	**Chain Of Custody:**	178314
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Utica NY	**Date Submitted:**	7/15/2008
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Date Analyzed:**	7/21/2008

Report Date: 7/21/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0869482	07102008-01	Flame	Wipe	****	1.000	12.00	ug/ft²	55	ug/ft²	
0869483	07102008-02	Flame	Wipe	****	1.000	12.00	ug/ft²	100	ug/ft²	
0869484	07102008-03	Flame	Wipe	****	1.000	12.00	ug/ft²	38	ug/ft²	
0869485	07102008-04	Flame	Wipe	****	1.000	12.00	ug/ft²	70	ug/ft²	
0869486	07102008-05	Flame	Wipe	****	1.000	12.00	ug/ft²	44	ug/ft²	
0869487	07102008-06	Flame	Wipe	****	1.000	12.00	ug/ft²	110	ug/ft²	
0869488	07102008-07	Flame	Wipe	****	1.000	12.00	ug/ft²	20	ug/ft²	
0869489	07102008-08	Flame	Wipe	****	1.000	12.00	ug/ft²	27	ug/ft²	
0869490	07102008-09	Flame	Wipe	****	1.000	12.00	ug/ft²	< 12	ug/ft²	
0869491	07102008-10	Flame	Wipe	****	1.000	12.00	ug/ft²	790	ug/ft²	
0869492	07102008-11	Flame	Wipe	****	1.000	12.00	ug/ft²	< 12	ug/ft²	
0869493	07102008-12	Flame	Wipe	****	1.000	12.00	ug/ft²	< 12	ug/ft²	
0869494	07102008-13	Flame	Wipe	****	1.000	12.00	ug/ft²	83	ug/ft²	
0869495	07102008-14	Flame	Wipe	****	1.000	12.00	ug/ft²	18	ug/ft²	
0869496	07102008-15	Flame	Wipe	****	1.000	12.00	ug/ft²	120	ug/ft²	
0869497	07102008-16	Flame	Wipe	****	1.000	12.00	ug/ft²	< 12	ug/ft²	
0869498	07102008-17	Flame	Wipe	****	1.000	12.00	ug/ft²	67	ug/ft²	
0869499	07102008-18	Flame	Wipe	****	1.000	12.00	ug/ft²	180	ug/ft²	
0869500	07102008-19	Flame	Wipe	****	1.000	12.00	ug/ft²	< 12	ug/ft²	

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	New York State Armory	**Chain Of Custody:**	178314		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Utica NY	**Date Submitted:**	7/15/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]		
		P.O. Number:	Not Provided	**Date Analyzed:**	7/21/2008	**Report Date:**	7/21/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit			Final Result		Comments
0869501	07082008-31	Flame	Paint Chip	****	N/A	0.01	%Pb		17	%Pb	
0869502	07082008-32	Flame	Paint Chip	****	N/A	0.01	%Pb		49	%Pb	
0869503	07082008-33	Flame	Paint Chip	****	N/A	0.01	%Pb		0.037	%Pb	
0869504	07082008-34	Flame	Paint Chip	****	N/A	0.01	%Pb		0.013	%Pb	
0869505	07082008-35	Flame	Paint Chip	****	N/A	0.01	%Pb		0.012	%Pb	
0869506	07082008-36	Flame	Paint Chip	****	N/A	0.01	%Pb		0.01	%Pb	
0869507	07082008-37	Flame	Paint Chip	****	N/A	0.02	%Pb		0.082	%Pb	Insufficient sample was submitted to meet recommended reporting limits.
0869508	07082008-38	Flame	Paint Chip	****	N/A	0.01	%Pb		0.07	%Pb	
0869509	07082008-60	Flame	Air	932	N/A	3.22	ug/m³	<	3.2	ug/m³	
0869510	07082008-61	Flame	Air	940	N/A	3.19	ug/m³	<	3.2	ug/m³	

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead See aihaaccap.org for details
100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	New York State Armory	**Chain Of Custody:**	178314		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Utica NY	**Date Submitted:**	7/15/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]		
		P.O. Number:	Not Provided	**Date Analyzed:**	7/21/2008	**Report Date:**	7/21/2008

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.
Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.
NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted] Non-Responsive

An AIHA (#100470), NVLAP (101143-0), and NY ELAP (#10920) Accredited Laboratory
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Appendix C
Selected Photographs of the Utica New York State Armory

Photo 1: The exterior front of the building that houses the Utica New York State Armory.

Photo 2: The exterior north side of the Utica New York State Armory.

Photo 3: Suspect asbestos-containing pipe insulation located in the Atrium area.

Photo 4: Water stained ceiling tile located in the mess hall.

Photo 5: Water stained ceiling tile located in the administration office.

Photo 6: Water stained ceiling tile located in office 160.

Photo 7: A water damaged ceiling and wall located in Office 219.

Photo 8: A water damaged ceiling located in Room 201.

Photo 9: Evidence of water incursion in the Old Firing Range that now functions as a Ventilation Room.

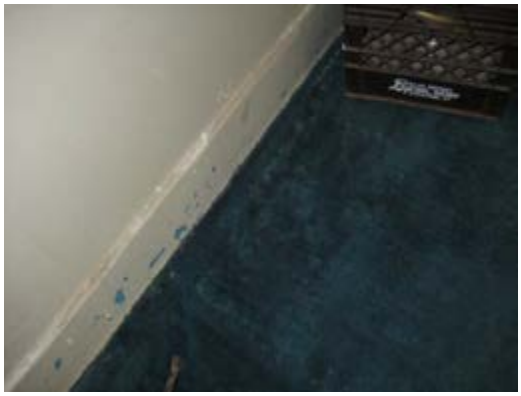


Photo 10: A water soaked carpet is located in Office 219.

Photo 11: An interior view of the drill hall.

Photo 12: A fire extinguisher is not properly mounted to the wall in the Atrium area.

Photo 13: Materials are stored in disarray in the Old Supply Room.

Photo 14: An exterior view of the garage that is used for storage and vehicle parking.

Appendix D
Risk Assessment Code Determination

RISK ASSESSMENT CODE DETERMINATION

A Risk Assessment Code (RAC) for each hazard identified is provided at the end of each hazard description. The RAC codes are derived using the matrix provided by the National Guard (reference DOD Instruction 6055.1). This process includes three steps:

- Step 1: Determine the Health Hazard Severity Code (HHSC)

A. Exposure Points Assessed

	Exposure Conditions				
		<CT	**Occasionally >CT Always <STD**	**>CT ≤STD**	**>STD**
AER Possible?	No	0	3	5	7
	Yes	1-2	4	6	8

AER – Alternate exposure route, such as skin absorption, ingestion

CT – DoD component threshold that triggers surveillance actions, such as microwatts/cm^2, dB, parts per million (ppm)

STD – DoD exposure limit, such as Threshold Limit Value (TLV) and Permissible Exposure Limit (PEL)

B. Medical Effects Points Assessed

Condition	Points
No medical effect, such as nuisance noise and nuisance odor	2
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability such as metal fume fever	3-4
Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling, irreversible illness or death, such as asbestosis and lung cancer	7-8

C. Determine the HHSC by totaling the points assessed and using the following guide:

Total Points (sum of A and B)	HHSC
13-16	I
9-12	II
5-8	III
0-4	IV

- Step 2: Determine the Mishap Probability Category (MPC)

A. Duration of Exposure Points Assessed

		Length of Exposure		
		1-8 hr/week	>8hr/week not continuous	Continuous
Type of Exposure	Irregular, intermittent	1-2	4-6	----
	Regular, periodic	2-3	5-7	8

B. Number of Exposed Personnel Points Assessed

Number of Exposed Personnel	Points
<5	1-2
5-9	3-4
9-49	5-6
>49	7-8

C. Determine the MPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum A and B)	MPC
14-16	A
10-13	B
5-9	C
<5	D

Step 3: Determine the RAC using the following matrix;

	Mishap Probability Category (MPC)				
		A	B	C	D
Health Hazard Severity Code	I	1	1	2	3
	II	1	2	3	4
	III	2	3	4	5
	IV	3	4	5	5

Appendix E
References

References

1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current edition.
2. Title 24, Code of Federal Regulations (CFR), Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.
3. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998.
4. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.
5. Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, October 15, 1990.
6. Army Regulation (AR) 385-10, The Army Safety Program, February 29, 2000.
7. Department of the Army Pamphlet (DA PAM) 40-501, Medical Service, Hearing Conservation Program, December 10, 1998.
8. Department of the Army Pamphlet (DA PAM) 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.
9. Technical Manual (TM) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.
10. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
11. Industrial Ventilation – A Manual of Recommended Practices, American Conference of Governmental Industrial Hygienists (ACGIH), current edition.
12. ANSI Z358.1 – 2004, Emergency Eyewash and Shower Equipment.
13. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
14. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America (IESNA)/ANSI.
15. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2004, “Ventilation for Acceptable Indoor Air Quality”.

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Utica Readiness Center
Utica, NY 13501-4216

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 25, 2013

Bonus Environmental, LLC

TABLE OF CONTENTS

APPENDICES

January 25, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Utica Readiness Center, Utica, NY 13501-4216

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Utica Readiness Center located at 1700 Parkway East in Utica, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 9, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Utica Readiness Center is an Army National Guard armory comprised of offices, conference rooms, classrooms, fitness rooms, locker rooms, storage rooms, a drill hall, a kitchen, mechanical rooms, a break room, a boiler room, a dining hall, and a former indoor firing range. The point of contact for the approximately 86,346 ft² Utica Readiness Center is Mr. Richard Baumann. Twenty nine (29) full-time administrative personnel are employed at the Utica Readiness Center. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Twenty four (24) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Utica Readiness Center Lead Wipe Sample Results				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
Utica RC-LW-1	11-9-12	Field Blank	---	< 12 μg
Utica RC-LW-2	11-9-12	Drill Hall, on floor, West end	0.111	< 110
Utica RC-LW-3	11-9-12	Drill Hall, on floor, East end	0.111	< 110
Utica RC-LW-4	11-9-12	Drill Hall, on top of Pepsi machine	0.111	120
Utica RC-LW-5	11-9-12	Drill Hall, on top of AED box	0.111	430
Utica RC-LW-6	11-9-12	Drill Hall, on top of Amnesty box	0.111	< 110
Utica RC-LW-7	11-9-12	Break Room, on top of microwave	0.111	< 110
Utica RC-LW-8	11-9-12	Mechanical Room 232, HVAC, on fan side	0.111	120
Utica RC-LW-9	11-9-12	Mechanical Room 232, HVAC, on supply side	0.111	130
Utica RC-LW-10	11-9-12	Kitchen, on top of freezer	0.111	< 110
Utica RC-LW-11	11-9-12	Storage (Former Indoor Firing Range), on floor, bullet trap area	0.111	840
Utica RC-LW-	11-9-12	Mechanical Room 232 (Former Indoor Firing Range), on top	0.111	2,200

Army National Guard – Utica Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
12		of heater		
Utica RC-LW-13	11-9-12	Mechanical Room 232 (Former Indoor Firing Range), on light fixture	0.111	380
Utica RC-LW-14	11-9-12	Basement, Classroom 2, on window sill	0.111	460
Utica RC-LW-15	11-9-12	Basement, Storage Room, on storage shelf	0.111	1,000
Utica RC-LW-16	11-9-12	Women's Locker Room 176, on top of locker #113	0.111	< 110
Utica RC-LW-17	11-9-12	Bar/Dining Room 104, on top of storage cabinet	0.111	160
Utica RC-LW-18	11-9-12	Dining Hall 119, on window sill	0.111	4,700
Utica RC-LW-19	11-9-12	Hallway, 1st Floor, on drinking fountain	0.111	< 110
Utica RC-LW-20	11-9-12	Hallway, 2nd Floor, on AED box	0.111	< 110
Utica RC-LW-21	11-9-12	Military Police Office, on filing cabinet	0.111	< 110
Utica RC-LW-22	11-9-12	Battalion Commander Office, on storage cabinet	0.111	< 110
Utica RC-LW-23	11-9-12	Office 256, on filing cabinet	0.111	< 110
Utica RC-LW-24	11-9-12	Office 244, on corner of table surface	0.111	< 110
Utica RC-LW-25	11-9-12	Restroom, on window sill	0.111	5,800

Surface cleanliness threshold = < 200 micrograms per square foot ($\mu g/ft^2$)

The former indoor firing range is currently used as Storage and a Mechanical Room. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area. The bullet trap had been removed from the "bullet trap area".

2.2 – Lead Air Sampling

The purpose of lead air monitoring was to document task-specific activities and corresponding exposures to lead. OSHA 29 CFR 1926.62 requires employers whose employees are exposed to lead in the work place, in any quantity, make a determination whether any employee's exposure exceeds the action level (AL) of 30 micrograms per cubic meter ($\mu g/m^3$) or the maximum permissible exposure

limit (PEL) of 50 µg/m^3 as 8-hour time weighted averages (TWAs). If employee exposures are less than 30 µg/m^3, training is required under the Hazard Communication 29 CFR 1926.59. Exposures that exceed the AL or PEL require the employer to comply with additional requirements, including air monitoring, additional training, and restricted work practices as outlined in OSHA 29 CFR 1926.62.

Representative fixed area sampling was conducted for potential airborne concentrations of lead in accordance with accepted Industrial Hygiene methods recognized by the National Institute for Occupational Safety and Health (NIOSH) and OSHA. Representative breathing zone samples were not collected from an employee performing administrative tasks.

Lead exposure monitoring was performed in accordance with the EPA method 600/R-93/200(M)-7420 (Atomic Absorption - Flame) with SKC personal air sampling pumps calibrated to 2.0 liters per minute. All samples were collected on 37 mm diameter cassettes with mixed-cellulose ester filters. All sampling pumps were calibrated before and after each use to ensure volume accuracy. One (1) samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, Maryland. Analytical results of the lead wipe and air samples are attached to this report as Appendix B.

Army National Guard - Utica Readiness Center
Lead Air Sample Results

Sample #	Sample Type	Sample Location	Flow Rate	Start	Stop	Vol.	Reprt. Limit (µg/m³)	Results (µg/m³)	8 hr TWA (µg/m³)
November 9, 2012									
Utica RC-LA-1	FB	Field Blank	---	---	---	0	3	< 3	N/A
Utica RC-LA-2	GA	Military Police Office	2.0	1203	1515	384	7.8	< 7.8	N/A

PS = Personal sample, G**A** = General Area, **N/A** = Not Applicable
Note: The OSHA PEL of 50 micrograms per cubic meter of air (µg/m³) is averaged over an 8 hr work shift

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Utica Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified areas of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling paint in the following areas:

- Approximately 20 ft² peeling yellow paint in the Mechanical Room;
- Approximately 4 ft² peeling blue paint in the 2nd floor Hallway;
- Approximately 1 ft² peeling beige paint in the Office HHC RNCO;
- Approximately 10 ft² peeling beige paint in the Storage;
- Approximately 12 ft² peeling beige paint in the Storage;
- Approximately 10 ft² peeling beige paint in the Storage;

- Approximately 8 ft² peeling beige paint in the Military Police Office;
- Approximately 20 ft² peeling beige paint in the Military Police Office;
- Approximately 2 ft² peeling beige paint in the Office;
- Approximately 15 ft² peeling beige paint in the Office;
- Approximately 4 ft² peeling beige paint in the Medic Storage;
- Approximately 7 ft² peeling beige paint in the Storage Room;
- Approximately 2 ft² peeling beige paint in the Boiler Room;
- Approximately 6 ft² peeling beige paint in the Overflow Room;
- Approximately 7 ft² peeling white paint in the 1st PLT Office;
- Approximately 15 ft² peeling white paint in the Office;
- Approximately 80 ft² peeling white paint in the Medic Room (Storage);
- Approximately 4 ft² peeling white paint in the Medic Storage;
- Approximately 20 ft² peeling white paint in the Maintenance Room;
- Approximately 1 ft² peeling white paint in the Dining Hall (119);
- Approximately 4 ft² peeling grey paint in the Basement Stairwell;
- Approximately 10 ft² peeling grey paint in the Overflow Room

Five (5) paint chip samples were collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. See table below for sample information:

Army National Guard – Utica Readiness Center
Paint Chip Samples

Sample #	*Sample Location*	*Color*	*Analytical Reporting Limit (%)*	*Analytical Results (%)*
UticaRC-PC-1	Mechanical room	Yellow	0.0045	0.039
UticaRC-PC-2	Storage room	Beige	0.0052	0.54
UticaRC-PC-3	2nd floor hallway	Blue	0.0039	48
UticaRC-PC-4	1st PLT office	White	0.006	0.0066
UticaRC-PC-5	Basement stairwell	Gray	0.0079	0.056

Analysis indicated that each of the peeling paints collected and submitted contained detectable levels of lead. The paints are therefore each considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Utica Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC observed the following damaged PACM during the industrial hygiene evaluation:

- Approximately 20 ft² of damaged wall plaster located in the Military Police Office
- Approximately 12 ft² of damaged wall plaster located in the office near Military Police
- Approximately 15 ft² of damaged wall plaster located in the office near 1st PTL office
- Approximately 30 ft² of damaged ceiling plaster located in the office two doors down from 1st PTL office

A sample was collected of the plaster PACM and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. The wall plaster analytical results determined "No Asbestos Detected".

Bonus Environmental, LLC collected a general area air sample within the vicinity of the damaged wall plaster located within the 2nd floor office. Analytical results indicate the levels of airborne asbestos fibers to be less than the Asbestos Hazard Emergency Response Act (AHERA) clearance criteria of 0.01 fibers/cubic centimeter (f/cc). Analytical results of the asbestos bulk samples are attached to this report as Appendix C.

Army National Guard - Utica Readiness Center
Asbestos Air Sample Results

Sample #	Sample Type	Sample Location	Flow Rate	Start	Stop	Vol.	Reprt. Limit (f/mm^2)	Results (f/cc)	8 hr TWA (f/cc)
November 9, 2012									
Utica RC-ASB-Air-1	FB	Field Blank	---	---	---	0	7	N/A	N/A
Utica RC-ASB-Air-2	GA	2nd floor office	2.0	1206	1516	380	0.007	< 0.007	N/A

PS = Personal sample, G**A** = General Area, **N/A** = Not Applicable
Note: The OSHA PEL of 0.1 fibers per cubic centimeter of air (f/cc) is averaged over an 8 hr work shift

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Utica Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water-damaged building materials and/or visible mold problems. Bonus Environmental, LLC identified the following water-damaged and/or building materials:

- Approximately 100 ft^2 of water-damaged block walls in the former indoor firing range;
- Approximately 2 ft^2 of stained/moldy dropped-ceiling tiles (DCT) in the 1st floor hallway;
- Approximately 20 ft^2 of water-damaged plaster walls in Military Police office;
- Approximately 12 ft^2 of water-damaged plaster walls in office next to Military Police office;
- Approximately 15 ft^2 of water-damaged plaster walls in office next to 1st PLT office;
- Approximately 30 ft^2 of water-damaged plaster ceiling in office 2nd to 1st PLT office;
- Approximately 3 ft^2 of stained DCT in kitchen office;
- Approximately 2 ft^2 of stained DCT in Dining hall 119;
- Approximately 3 ft^2 of stained DCT in Fitness room 181;

- Approximately 2 ft^2 of stained DCT in 2nd floor hallway;
- Approximately 2 ft^2 of stained DCT in office 160;
- Approximately 1 ft^2 of stained DCT in classroom 148.

3.4 - Housekeeping
During the industrial hygiene evaluation of the Utica Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Utica Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews
During the industrial hygiene evaluation of the Utica Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified. One (1) employee expressed concern with the peeling paint and damaged plaster ceiling and walls throughout the Utica Readiness Center.

3.6 – Indoor Air Quality
During the industrial hygiene evaluation of the Utica Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 387 ppm to 508 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person

depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation ranged from 1.7 ppm to 6.9 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Utica Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 64.9ºF to 76.0ºF and are considered to be outside of an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Utica Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 23.2% to 40.9%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Utica Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, southwest side of building (sunny)	387	6.9	32.9	52.2
Storage Room	486	1.7	37.7	72.8
Classroom 2	508	2.7	40.9	76.0
Drill Hall	402	4.4	23.2	68.8
Classroom 150B	431	4.4	23.7	69.9
Maintenance Room 127	454	5.2	26.9	**64.9**
Kitchen Office	401	3.9	25.8	**66.1**
Women's Locker Room	399	3.3	24.4	69.7
Office 251	429	4.5	23.7	72.0
1st PLT Office	410	4.5	23.4	72.7
Battalion Commander's Office	440	4.7	25.1	73.6

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Utica Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Utica Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Office	88.5	50	Yes
Office (245)	81.3	50	Yes
Office (244)	77.6	50	Yes
Office (246)	76.8	50	Yes
Office (248)	82.4	50	Yes
Conference Room (247)	101.9	30	Yes
Office (249)	Inaccessible		
Office (250)	48.1	50	No
Office (251)	66.5	50	Yes
Office (254)	48.8	50	No
Office (256)	102.7	50	Yes
Office (257)	Inaccessible		
Office (258)	Inaccessible		
Office	63.2	50	Yes
Conference Room (259)	133.6	30	Yes
Office (255)	Inaccessible		
Office (253)	106.4	50	Yes
Women's Restroom	74.4	5	Yes
Women's Locker Room	86.4	7	Yes
Men's Restroom	35.8	5	Yes
Men's Locker Room	87.2	7	Yes
Battalion Commander's Office	Inaccessible		
Office HHC RNCO	24.8	50	No
Office HHC 1SG	58.7	50	Yes
Office HHC CDR	Inaccessible		
Armory Superintendent's Office	Inaccessible		
Family Readiness Center Office	Inaccessible		
Office	18.3	50	No
Conference Room	99.2	30	Yes
Storage	17.0	30	No
Mechanical Room (Former Indoor Firing Range)	34.9	30	Yes
Storage (Former Indoor Firing Range)	101.7	30	Yes
Storage	74.1	30	Yes
Hallway	18.3	5	Yes
PLT SGT Room (Conference Room)	13.9	30	No
Battalion Commander's Office	53.1	50	Yes
Restroom	21.2	5	Yes
Restroom	5.6	5	Yes
Military Police Office	43.3	50	No
Military Police Office	34.2	50	No
Office	20.2	50	No
1st PLT Office	Inaccessible		
Office	46.1	50	No
Office	50.9	50	Yes
Restroom	Lighting Inoperable		
Drill Hall	53.4	30	Yes
107 MP CO	Inaccessible		

Army National Guard – Utica Readiness Center *Lighting Measurements*			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Medic Room (Storage)	8.2	30	No
Medic Storage	7.6	30	No
(134)	Inaccessible		
Storage (135)	35.8	30	Yes
Storage (129)	18.3	30	No
State Room	26.6	30	No
Maintenance Room	12.2	50	No
(126)	Inaccessible		
Locker Room (Under Renovation)	61.0	7	Yes
Kitchen Storage	50.4	30	Yes
Kitchen	57.5	50	Yes
Kitchen Office	113.4	50	Yes
Dining Hall (119)	60.9	10	Yes
Women's Restroom	73.6	5	Yes
Women's Locker Room (176)	45.3	7	Yes
Women's Shower	52.2	7	Yes
Weight Room	70.9	30	Yes
Men's Restroom	27.7	5	Yes
Women's Restroom	20.9	5	Yes
Recruiter's Office	Inaccessible		
Recruiter's Office	Inaccessible		
Bar/Dining Room	3.9	10	No
(106)	Inaccessible		
(109)	Inaccessible		
Fitness Room (181)	31.5	30	Yes
Men's Restroom	61.6	5	Yes
Men's Locker Room (175)	23.5	7	Yes
Men's Shower	82.4	7	Yes
Supply Room A (169)	Inaccessible		
Supply Room B (170)	Inaccessible		
1st Floor Hallway	13.8	5	Yes
Administration Training Office (161)	59.8	50	Yes
Office	Inaccessible		
Office (160)	55.3	50	Yes
Office (159)	Inaccessible		
Conference Room (158)	90.6	30	Yes
Classroom (150B)	124.8	30	Yes
Break Room (152)	58.3	10	Yes
Classroom (148)	44.6	30	Yes
(148A)	Inaccessible		
Mechanical Room (145)	20.4	30	No
Women's Restroom	64.2	5	Yes
Men's Restroom	57.4	5	Yes
Machine Room (156)	Inaccessible		
Elevator Lobby	73.8	10	Yes
Stairwell	7.4	5	Yes
Storage Room	20.7	30	No

Army National Guard – Utica Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Boiler Room	25.2	30	No
Classroom 1	31.7	30	Yes
Storage 1	6.1	30	No
Storage 2	25.8	30	No
Classroom 2	68.5	30	Yes
Overflow Room (classroom)	26.4	30	No

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Utica Readiness Center located at 1700 Parkway East in Utica, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 9, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Air sampling for airborne lead dust indicated concentrations below the detection limit;

2. Lead wipe sample results collected within the Utica Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in the following areas:
    - Drill Hall, on top of AED box
    - Storage (Former Indoor Firing Range), on floor, bullet trap area
    - Mechanical Room 232 (Former Indoor Firing Range), on top of heater
    - Mechanical Room 232 (Former Indoor Firing Range), on light fixture
    - Basement, Classroom 2, on window sill
    - Basement, Storage Room, on storage shelf
    - Dining Hall (119), on window sill
    - Restroom, on window sill

3. Bonus Environmental, LLC identified areas of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard. Peeling paint was found in the following areas:

   - Approximately 20 ft² peeling yellow paint in the Mechanical Room;
   - Approximately 4 ft² peeling blue paint in the 2nd floor Hallway;
   - Approximately 1 ft² peeling beige paint in the Office HHC RNCO;
   - Approximately 10 ft² peeling beige paint in the Storage;
   - Approximately 12 ft² peeling beige paint in the Storage;
   - Approximately 10 ft² peeling beige paint in the Storage;
   - Approximately 8 ft² peeling beige paint in the Military Police Office;
   - Approximately 20 ft² peeling beige paint in the Military Police Office;
   - Approximately 2 ft² peeling beige paint in the Office;
   - Approximately 15 ft² peeling beige paint in the Office;
   - Approximately 4 ft² peeling beige paint in the Medic Storage;
   - Approximately 7 ft² peeling beige paint in the Storage Room;
   - Approximately 2 ft² peeling beige paint in the Boiler Room;
   - Approximately 6 ft² peeling beige paint in the Overflow Room;
   - Approximately 7 ft² peeling white paint in the 1st PLT Office;
   - Approximately 15 ft² peeling white paint in the Office;
   - Approximately 80 ft² peeling white paint in the Medic Room (Storage);
   - Approximately 4 ft² peeling white paint in the Medic Storage;
   - Approximately 20 ft² peeling white paint in the Maintenance Room;
   - Approximately 1 ft² peeling white paint in the Dining Hall (119);
   - Approximately 4 ft² peeling grey paint in the Basement Stairwell;
   - Approximately 10 ft² peeling grey paint in the Overflow Room

   Analytical results indicated that each of the peeling paints contained detectable levels of lead, and are therefore considered lead-based paints.

4. Bonus Environmental, LLC observed damaged PACM's in the form of plaster, which was located in the Military Police Office and three (3) offices. Analytical results determined that the plaster had "No Asbestos Detected."

5. Bonus Environmental, LLC identified the following water-damaged and/or moldy building materials:

   - Approximately 100 ft^2 of water-damaged block walls in the former indoor firing range;
   - Approximately 2 ft^2 of stained/moldy dropped-ceiling tiles (DCT) in the 1st floor hallway;
   - Approximately 20 ft^2 of water-damaged plaster walls in Military Police office;
   - Approximately 12 ft^2 of water-damaged plaster walls in office next to Military Police office;
   - Approximately 15 ft^2 of water-damaged plaster walls in office next to 1st PLT office;
   - Approximately 30 ft^2 of water-damaged plaster ceiling in office 2nd to 1st PLT office;
   - Approximately 3 ft^2 of stained DCT in kitchen office;

- Approximately 2 ft^2 of stained DCT in Dining hall 119;
- Approximately 3 ft^2 of stained DCT in Fitness room 181;
- Approximately 2 ft^2 of stained DCT in 2nd floor hallway;
- Approximately 2 ft^2 of stained DCT in office 160;
- Approximately 1 ft^2 of stained DCT in classroom 148.

6. Bonus Environmental, LLC found the housekeeping practices within Utica Readiness Center in good order, with the exception of residual lead dust concentrations.

7. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified. One employee did express concern regarding the damaged plaster and the peeling paints within the Readiness Center.

8. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Utica Readiness Center. All were found to be below or within their acceptable ranges/limits, with the exception of two temperature readings which were below the required/recommended level.

9. Areas within the Utica Readiness Center facility were identified as improperly illuminated.

10. Air sampling for airborne asbestos fiber concentrations indicated concentrations below the detection limit;

11. No Health and Safety policies were available for review at the Utica Readiness Center.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North - Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings,

conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

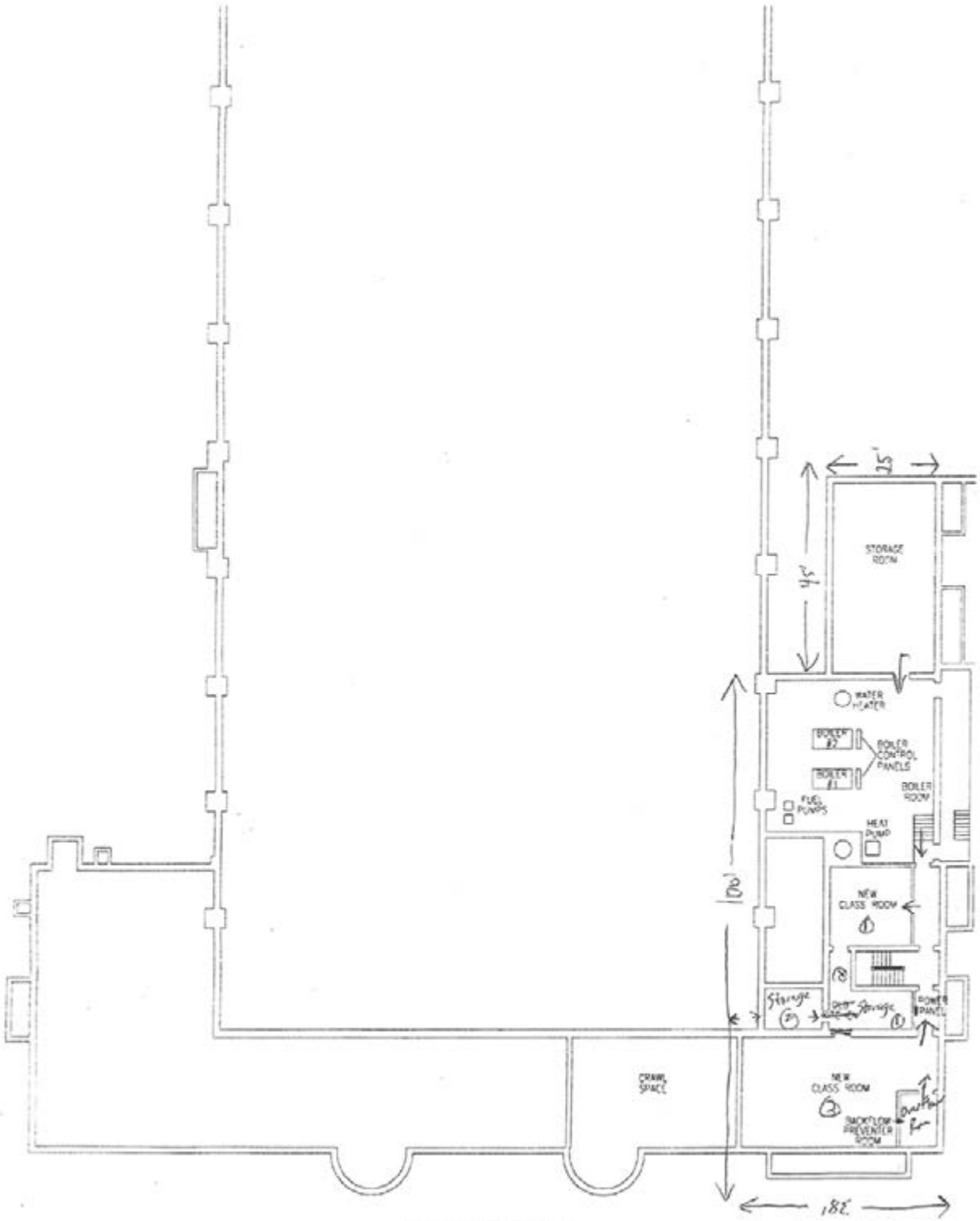
Non-Responsive

Principal
Bonus Environmental, LLC

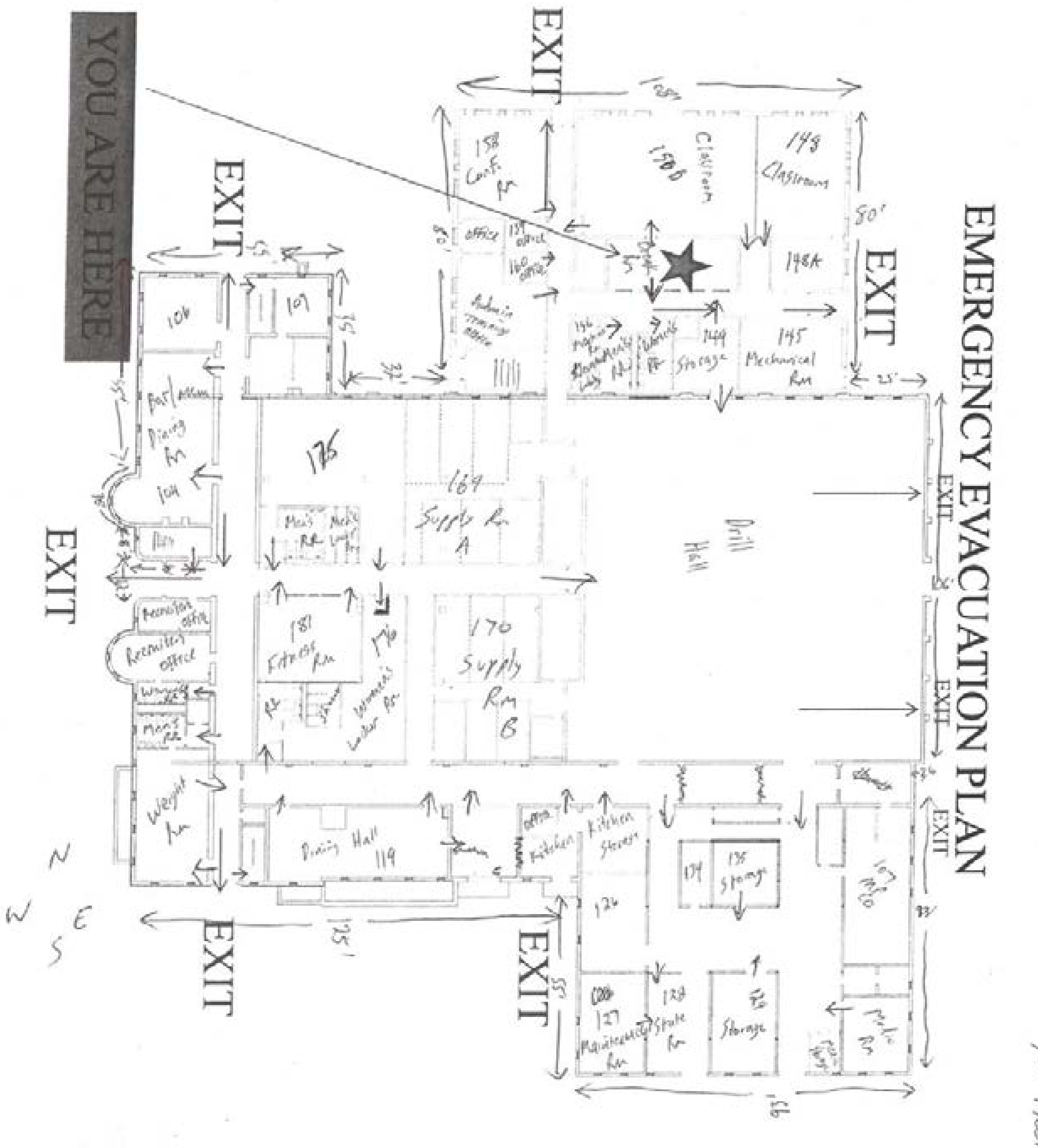
Utica RC_12_Report.docx

Appendix A

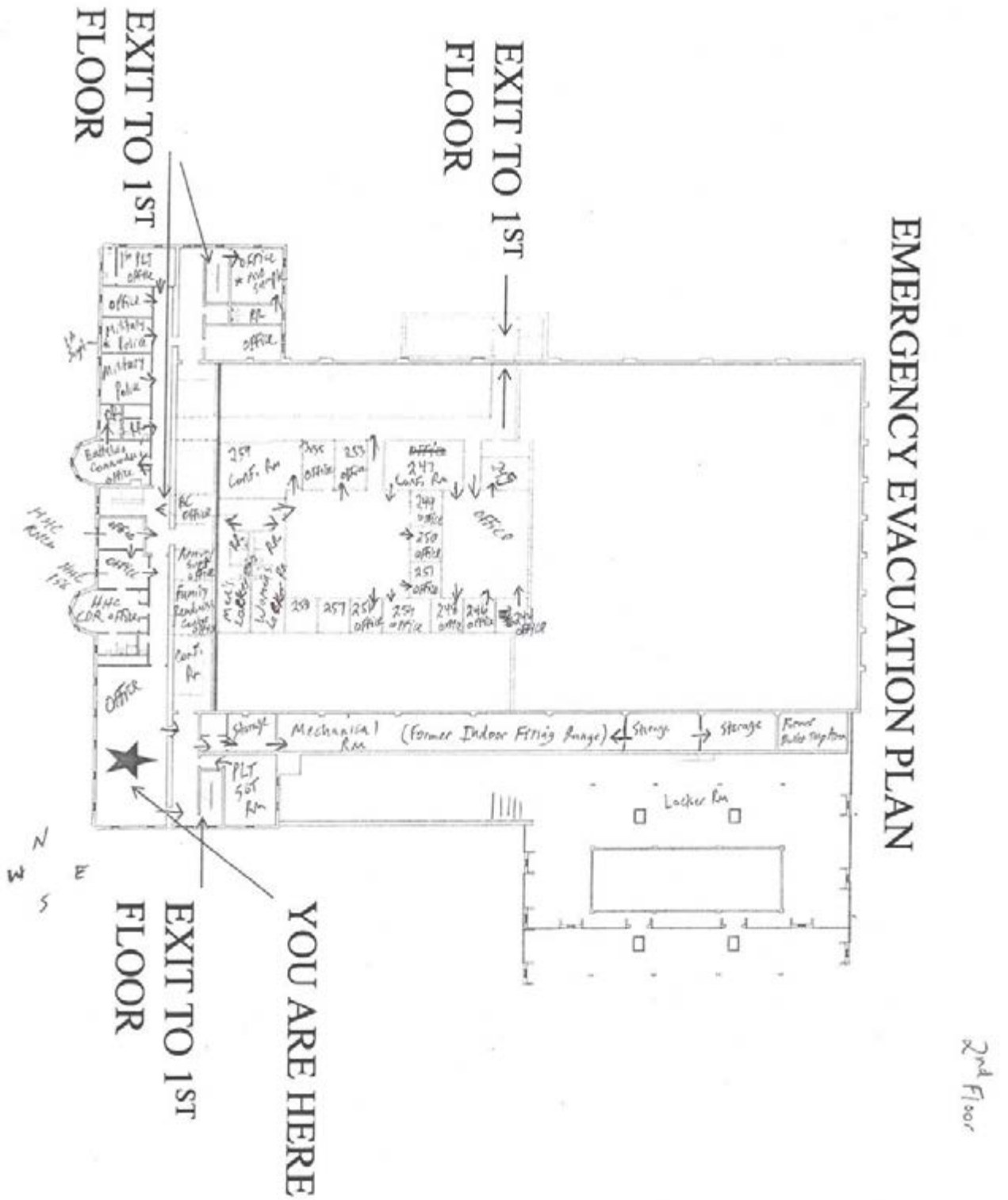
Shop Diagram and Air Flow Patterns



UTICA ARMORY
BASEMENT PLAN


EMERGENCY EVACUATION PLAN
YOU ARE HERE
EXIT
EXIT
EXIT
EXIT
EXIT
EXIT
EXIT
EXIT
EXIT
1st Floor

EMERGENCY EVACUATION PLAN



2nd Floor

Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Utica RC	Chain Of Custody:	514537
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	1700 Parkway East, Utica, NY 13501-4216	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/30/2012 Report Date: 11/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016368	UticaRC-PC-1	Flame	Paint Chip	****	N/A	0.0045	%Pb		0.039	%Pb	
13016369	UticaRC-PC-2	Flame	Paint Chip	****	N/A	0.0052	%Pb		0.54	%Pb	
13016370	UticaRC-PC-3	Flame	Paint Chip	****	N/A	0.0039	%Pb		48	%Pb	
13016371	UticaRC-PC-4	Flame	Paint Chip	****	N/A	0.006	%Pb		0.0066	%Pb	
13016372	UticaRC-PC-5	Flame	Paint Chip	****	N/A	0.0079	%Pb		0.056	%Pb	
13016373	UticaRC-LA-1	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
13016374	UticaRC-LA-2	Flame	Air	384	N/A	7.8	ug/m³	<3	<7.8	ug/m³	
13016375	UticaRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13016376	UticaRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016377	UticaRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016378	UticaRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft²	13	120	ug/ft²	
13016379	UticaRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft²	48	430	ug/ft²	
13016380	UticaRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016381	UticaRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016382	UticaRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft²	13	120	ug/ft²	
13016383	UticaRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft²	14	130	ug/ft²	
13016384	UticaRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016385	UticaRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft²	94	840	ug/ft²	
13016386	UticaRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft²	250	2200	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Utica RC	Chain Of Custody:	514537
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	1700 Parkway East, Utica, NY 13501-4216	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/30/2012 Report Date: 11/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13016387	UticaRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft²	42	380	ug/ft²	
13016388	UticaRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft²	51	460	ug/ft²	
13016389	UticaRC-LW-15	Flame	Wipe	****	0.111	110	ug/ft²	110	1000	ug/ft²	
13016390	UticaRC-LW-16	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016391	UticaRC-LW-17	Flame	Wipe	****	0.111	110	ug/ft²	18	160	ug/ft²	
13016392	UticaRC-LW-18	Flame	Wipe	****	0.111	110	ug/ft²	520	4700	ug/ft²	
13016393	UticaRC-LW-19	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016394	UticaRC-LW-20	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016395	UticaRC-LW-21	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016396	UticaRC-LW-22	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016397	UticaRC-LW-23	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016398	UticaRC-LW-24	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13016399	UticaRC-LW-25	Flame	Wipe	****	0.111	110	ug/ft²	640	5800	ug/ft²	

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INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Utica RC	Chain Of Custody:	514537
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	1700 Parkway East, Utica, NY 13501-4216	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-3003	Date Analyzed:	11/30/2012 Report Date: 11/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Non-Responsive

Technical Manag Non-Responsive

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquire: 514537

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Utica RC
2. Job Location: 1700 Parkway East, Utica NY 13501-4216
3. Job #: 1061-15 PO #: W912K6-09-A-0003
4. Contact Pers [redacted] @ phone #
5. Submitted b [redacted] ature:

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Includ [redacted] with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day + ☐ Results Required By Noon	☒ Emai [redacted] @ bcousenvironmental.com
Comments:	☐ 2 Day Date Due: 11/30/12	☒ Fax: [redacted] @us.army.mil
		☒ Verbe [redacted] @us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☒ NIOSH 7400 2 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis

☒ Pb Paint Chip 5 (QTY)
☒ *Pb Dust Wipe (wipe type: Ghost) 25 (QTY)
☒ *Pb Air 2 (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS TEM	PCM	PLM	LEAD	MOLD	MATRIX AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
Utica RC-ASB-Air-1	Field Blank	11-9			*				*						
Utica RC-ASB-Air-2	2nd Floor, office				*				*						
Utica RC-ASB-1	Military police office					*				*					
* SEE	ATTACHED FIELD DATA SHEETS	*					*				*				
Utica RC-PC-1	Mechanical Rm						*			*					
Utica RC-PC-2	Storage Rm						*			*					
Utica RC-PC-3	2nd Floor, Hallway						*			*					
Utica RC-PC-4	1st PLT Office						*			*					
Utica RC-PC-5	Basement, Stairwell						*			*					

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time:	Contact:	By:
Date/Time:	Contact:	By:
Date/Time:	Contact:	By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11 / 21 / 12 @ 1125 Via: FEDEX By: (P [redacted]
2. Date/Time Analyzed: ___ / ___ / ___ @ ___ By (Print): ___ Sign: ___
3. Results Reported To: ___ Via: ___ Date: ___ / ___ / ___ Time: ___ Initials: ___
4. Comments: 7991 5736 6925

Air Sampling Field Data Sheet

Date Collected: 11-9-12
Job Number: 1061-15
Contact Perso: Non-Responsive
Job Name: Utica RC
Job Location:
Address: 1700 Parkway East
Utica NY 13501-4216
Company: Bovis Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Type (IWA, OWA, FC, ENV, PER, AMB, BLK, etc.)	Sample Location	Sampling Pump Data					Comments (for mold samples, must indicate sampling apparatus and/or collection media)
			Time On	Time Off	Total Min.	Flow Rate LPM	Volume L	
Utica RC-LA-1	FB	Field Blank	—	—	Ø	Ø	Ø	
Utica RC-LA-2	GA	Military Police office	1203	1515	192	2.0	384	
Utica RC ASh-Ash-1	FB	Field Blank	—	—	Ø	Ø	Ø	
Utica RC-Ash-Ash-2	GA	2nd Fl, OFFICE	1206	1516	190	2.0	380	

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Surface Sampling Field Data Sheet

Date Collected: 11-9-12
Job Number: 1061-15
Contact Person: Non-Responsive

Job Name: Utica RC
Job Location:
Address: 1700 Parkway East
Utica, NY 13501-4216

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Utica RC-LW-1	Field Blank	—	—	Ghost wipe
Utica RC-LW-2	Drill Hall	On Floor, West side	4" x 4"	
Utica RC-LW-3	Drill Hall	On Floor, East side		
Utica RC-LW-4	Drill Hall	On top of Pepsi Machine		
Utica RC-LW-5	Drill Hall	On top of AED Box		
Utica RC-LW-6	Drill Hall	On top of Amnesty Box		
Utica RC-LW-7	Break Rm	On top of Microwave		
Utica RC-LW-8	Mechanical Rm 232	HVAC, Fan side		
Utica RC-LW-9	Mechanical Rm 232	HVAC, Supply side		
Utica RC-LW-10	Kitchen	On top of Freezer		
Utica RC-LW-11	Storage (Former Indoor Firing Range)	On Floor, Bullet trap area		
Utica RC-LW-12	Mechanical Rm 232 (Former Indoor Firing Range)	On top of Heater		
Utica RC-LW-13	Mechanical Rm 232 (Former Indoor firing Range)	On light Fixture	↓	↓

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Surface Sampling Field Data Sheet

Date Collected: 11-9-17
Job Number: 1061-15
Contact Perso: Non-Responsive

Job Name: Utica RC
Job Location:
Address: 1700 Parkway East, Utica, NY 13501-4216

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected B: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Utica RC-LW-14	Basement, Classroom 2	On Window sill	4"x4"	6 host wipe
Utica RC-LW-15	Basement, Storage Rm	On Storage Shelf	↓	↓
Utica RC-LW-16	Women's Locker Rm 176	On top of locker # 113	↓	↓
Utica RC-LW-17	Bar/Dining Rm 104	On top of Storage Cabinet	↓	↓
Utica RC-LW-18	Dining Hall 119	On window Sill	↓	↓
Utica RC-LW-19	Hallway, 1st Floor	On Drinking Fountain	↓	↓
Utica RC-LW-20	Hallway, 2nd Floor	On AED Box	↓	↓
Utica RC-LW-21	Military Police office	On Filing Cabinet	↓	↓
Utica RC-LW-22	Battalion Commander Office	On Storage Cabinet	↓	↓
Utica RC-LW-23	Office 256	On Filing Cabinet	↓	↓
Utica RC-LW-24	Office 244	On corner of table surface	↓	↓
Utica RC-LW-25	Restroom	On Window Sill	↓	↓

Please Return Samples To:
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Appendix C

Asbestos Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	Job Name:	Utica RC	Chain Of Custody:	514537
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	1700 Parkway East, Utica, NY 13501-4216	Date Analyzed:	11/30/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13016402	UticaRC-Asb-1	NAD	--	--	--	--	--	--	--	--	--	100	PL	White	Homogeneous	PC	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director Non-Responsive

Analyst Non-Responsive

NVLAP (101143-0) Accredited Laboratory

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Bulk Sampling Survey Sheet

Page 1 of 1

Date Collected: 11-9-12
Job Number: 1061-15
Contact Person: Non-Responsive [redacted]

Job Name: Utica RC
Job Location:
Address: 1700 Parkway East
Utica NY 13501-4216

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive [redacted]
COC Number:

Sample Number	Homogenous Area ID	Type of Material	Sample Location	Friable	Condition of Material	Accessibility	Photo	Comments
Utica RC-ASB-1	Surfacing	Plaster	Military Police office	☒ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☒ Medium ☐ High	☒ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	
				☐ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☐ High	☐ Yes ☐ No	

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4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To Th Number For Inquire: 514537

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-JH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Utica RC
2. Job Location: 1700 Parkway East, Utica NY 13501-4216
3. Job #: 1061-15 PO #: W912K6-09-A-0003
4. Contact Pers [redacted] @ phone #
5. Submitted by [redacted] ature:

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day + ☐ Results Required By Noon	☒ Email: [redacted] @ tonusenvironmental.com
Comments:	☐ 2 Day Date Due: 11/30/12	☒ Fax: [redacted] @us.army.mil
		☒ Verbal [redacted] @us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☒ NIOSH 7400 3 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis

☒ Pb Paint Chip 5 (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 25 (QTY)
☒ *Pb Air 2 (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

SAMPLE INFORMATION				ANALYSIS					MATRIX						CLIENT CONTACT
CLIENT ID #	SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER (DRINK/ WASTE)	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
Utica RC-ASBAir-1	Field Blank	11-9			*				*							Date/Time: Contact: By:
Utica RC-ASB-Air-2	2nd Floor, office		1		*				*							
Utica RC-ASB-1	Military Police office					*				*						
* SEE ATTACHED FIELD DATA SHEETS		*					*				*					
Utica RC-PC-1	Mechanical Rm						*			*						
Utica RC-PC-2	Storage Rm						*			*						Date/Time: Contact: By:
Utica RC-PC-3	2nd Floor, Hallway						*			*						
Utica RC-PC-4	1st PLT Office						*			*						
Utica RC-PC-5	Basement, Stairwell						*			*						
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 11 / 21 / 12 @ 1125 Via: FEDEX [redacted]
2. Date/Time Analyzed: 11 / 30 / 12 @ By (Print): [redacted]
3. Results Reported To: Via: E-mail Date: 11 / 30 / 12 Time: Initials: PC
4. Comments: 7991 5736925

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Utica RC	Chain Of Custody:	514537
Address:	301-III Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	1700 Parkway East, Utica, NY 13501-4216	Date Submitted:	11/21/2012
	Havre de Grace, Maryland 21078	Job Number:	1061-15	Person Submitting:	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	11/30/2012 Report Date: 11/30/2012
Attention:	Non-Responsive			Date Sampled:	11/9/2012

Summary of Phase Contrast Microscopy

AMA Sample Number	Client Sample Number	Volume Sampled (Liters)	Fibers Per Millimeter Squared	Fibers Per Cubic Centimeter	Analyst I.D.	Sample Type	Comments
13016400	UticaRC-AsbAir-1	0	<7*	*****	RP	BLK	0 fiber(s) per 100 fields
13016401	UticaRC-AsbAir-2	380	<7*	<0.007*	RP	N/P	

* The Reporting Limit for AMA Laboratory is 7.0 fibers per square millimeter of filter. The reporting limit for the air concentration of fibers (f/cc) is dependent on the sampled air volume. Fibers counts were determined by the methods described in NIOSH Analytical Method 7400, 'Fibers' (Revision 3, Issue 2, 8/15/94). All personnel samples were analyzed following the OSHA Reference Method.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Note: All samples were received in good condition unless otherwise noted.

Uncertainty: for fibers/mm² in the range of 7-25 the SR is 0.253, 26-64 SR=0.256, 64-127 SR=0.344, >127 SR=0.147

Sample results shown here have been corrected for any field blank(s) submitted with this sample set.

Technical Director: Non-Responsive

Analyst(s): Non-Responsive

An AIHA (#100470) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

Air Sampling Field Data Sheet

Date Collected: 11-9-12
Job Number: 1061-15
Contact Perso: [redacted]
Job Name: Utica RC
Job Location:
Address: 1700 Parkway East
Utica NY 13501-4216

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: [redacted]
COC Number:

Sample Number	Sample Type (IWA, OWA, FC, ENV, PER, AMB, BLK, etc.)	Sample Location	Sampling Pump Data					Comments (for mold samples, must indicate sampling apparatus and/or collection media)
			Time On	Time Off	Total Min.	Flow Rate LPM	Volume L	
Utica RC-LA-1	FB	Field Blank	—	—	Ø	Ø	Ø	
Utica RC-LA-2	GA	Military Police office	1203	1515	192	2.0	384	
Utica RC ASB-Air-1	FB	Field Blank	—	—	Ø	Ø	Ø	
Utica RC ASB-Air-2	GA	2nd Fl, OFFICE	1206	1516	190	2.0	380	

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

Photographs

Building exterior, looking northeast

Basement stairwell, peeling gray paint

Boiler room

Boiler room, Safety Equipment board

Boiler room, emergency eyewash

2nd floor hallway, peeling blue paint on door

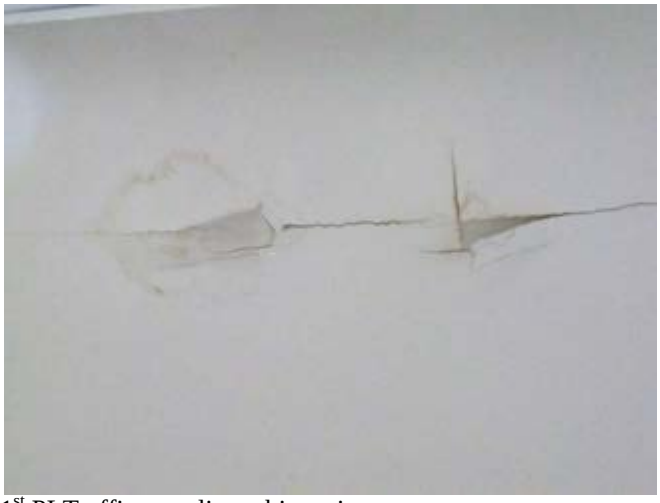
Mechanical room 232, air handling unit

Mechanical room 232, peeling yellow paint / water-damaged brick wall

Storage room, peeling beige paint

Former indoor firing range

Military Police office, damaged plaster



1st PLT office, peeling white paint

2nd floor office, damaged plaster ceiling

2nd floor stairwell, stained/moldy dropped-ceiling tile

Maintenance room 128, flammables cabinet

Appendix E

References

1. Department of Defense Instruction (0001) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct 2011.

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

16. Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, March 2001

17. Army Facilities Management Information Document on Mold Remediation Issues TG277, February 2002

18. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

Environmental and Occupational Risk Management®

400 West Cummings Park, Suite 5850
Woburn, MA 01801
781.756.3800
(fax) 781.729.4648
www.eorm.com

February 24, 2009

Ms. Non-Responsive
NGB Region North IH Office
301 – IH Old Bay Lane
Havre De Grace, MD 21078
Non-Responsive @us.army.mil

Re: Results of Industrial Hygiene Survey, 55 South Street, Walton, NY
EORM® Project No. NATL0009001

Dear Ms. Non-Responsive:

At your request, on September 3, 2008, Environmental & Occupational Risk Management, Inc. (EORM®) performed an industrial hygiene survey at the National Guard Readiness Center located at 55 South Street, Walton, NY 13856. The observations, methodology, results and discussion are provided in the sections that follow. Should you have any questions please do not hesitate to contact me.

Regards,

Non-Responsive

Non-Responsive, MPH
Associate EHS Consultant
EORM, Inc.
Telephone 781.756.3813
E-mail Non-Responsive @eorm.com

Reviewed by:

Non-Responsive

Non-Responsive CIH
Senior EHS Consultant

Attachments

Industrial Hygiene Survey

National Guard Readiness Center
55 South Street
Walton, NY 13856

Project No. NATL0009

3 September 2008

Prepared by:

Environmental and Occupational Risk Management®

400 West Cummings Park, Suite 5850
Woburn, MA 01801

Table of Contents

Executive Summary

Environmental and Occupational Risk Management, Inc. (EORM®) was contracted by the National Guard Bureau Industrial Hygiene Region North Office (NGB IH Office) to perform a baseline industrial hygiene (IH) survey of selected Readiness Centers and administrative buildings located in New York. This report summarizes the results of the Walton Readiness Center located at 55 South Street, which occurred on September 3, 2008.

During the IH survey, EORM collected surface wipe samples and area air samples for lead. The results indicated surface lead on surfaces within the drill hall, including the air handling units (AHUs). The surface lead contamination did not translate into detectable concentrations of lead in the area air samples on the day of EORM's site visit. However, due to the low foot traffic on the day of EORMs site visit, it is recommended that the drill hall and associated AHUs be decontaminated by a contractor specializing in lead decontamination.

Overall the Walton Readiness Center appears dusty. The return air grilles and the supply air grilles to the AHUs in the drill hall were very dirty. There was no peeling paint, visible water damage, suspect mold growth, or asbestos containing materials.

There is an attached garage with 3 vehicle maintenance bays at the Walton Readiness Center. The garage does not have vehicle exhaust ventilation.

The results of the indoor air quality survey indicated sufficient outdoor air supply to the occupied spaces of the readiness center. However, the results indicated that the relative humidity inside was above 60%, which over time may lead to microbial growth.

Introduction

Environmental and Occupational Risk Management, Inc. (EORM) was contracted by National Guard Bureau Industrial Hygiene Region North Office (NGB IH Office) to perform an industrial hygiene (IH) survey of selected National Guard Armories located in New York. This report summarizes the results of the readiness center located at 55 South Street, Walton, New York. The IH survey was performed on September 3, 2008 by Mr. Non-Responsive, Associate EHS Consultant. Ms. Non-Responsive, CIH, Senior EHS Consultant, reviewed this report and provided project support. The scope of work completed during this survey included the following:

- Collect wipe samples for lead from surfaces within the drill hall, administration building, and the converted indoor firing range, if present.
- Collect personal or general area full-shift samples for lead on National Guard members during normal activities.
- Inspect the physical condition of the facility and personnel concerns.
- Evaluate the heating, ventilating, and air conditioning system.
- Conduct a lighting survey in all areas of the facility.
- Evaluate the attached garage, if present.
- Collect photographs of the interior and exterior conditions of the readiness center.
- Provide a diagram of the shop layout
- Prepare a detailed report of findings and sampling results, including recommendations for improvement in any areas of concern and conclusion

EORM's survey activities were aided by the generous assistance of Mr. Non-Responsive who provided information on the readiness center.

Industrial Hygiene Survey Details

The wipe samples were collected and analyzed in accordance with the Occupational Safety and Health Administration (OSHA) method ID-125G. The samples were analyzed for lead by AMA Analytical Services, Inc. in Lanham, Maryland. AMA is accredited by the American Industrial Hygiene Association.

The analytical laboratory results and chain-of-custody forms corresponding to these samples are provided in Appendix 3. Table 1 includes the results in micrograms of lead per square foot (µg/ft2).

Table 1: Wipe sample results, September 3, 2008.

Sample Number	Location	Description	Area (ft2)	Results (µg/ft2)
Wtn-01	Drill hall	Frame of return air grate on AHU-1	0.108	590
Wtn-02	Drill hall	Frame of return air grate on AHU-2	0.108	400
Wtn-03	Drill hall	Louver on supply air grate on AHU-3	0.108	2,500
Wtn-04	Drill hall	Floor	0.108	300
Wtn-05	Drill hall	Maintenance/custodial office desk	0.108	< 110
Wtn-06	Orderly room	Shelf	0.108	< 110
Wtn-07	State office	Top of file cabinet	0.108	< 110
Wtn-08	Commander's office	Shelf	0.108	< 110
Wtn-09	Kitchen	Counter top	0.108	< 110
Wtn-10	Classroom 2	Top of candy machine	0.108	< 110
Wtn-11	Garage	Toolbox	0.108	130
Wtn-12	Classroom 1	Window sill	0.108	160
Wtn-13	Locker room (former IFR)	Bottom of locker (inside surface)	0.108	2,400
Wtn-14	Locker room (former IFR)	Floor by ladder at rear	0.108	2,400
Wtn-15	Locker room (former IFR)	Floor outside of doorway	0.108	< 110

There was no lead detected on the field blank

The results indicate that surface lead is present on the three AHUs in the drill hall as well as on the floor of the drill hall. Surface lead was identified on a toolbox in the garage, a window sill in classroom 1, and on surfaces within the locker room. There were no remaining light fixtures or HVAC within the locker room (former IFR); therefore only surfaces installed following the conversion were assessed.

Area Air Sample Results

There were no fulltime National Guard members on site during EORM's site visit. Therefore, area air samples were collected to represent potential exposure to airborne lead during drill weekends. The two locations selected for the area samples were the maintenance/custodial office desk and the Commander's desk.

The area air samples were collected and analyzed in accordance with OSHA Method ID-125G. The samples were analyzed for lead by AMA Analytical Services, Inc. in Lanham, Maryland. AMA is accredited by the American Industrial Hygiene Association.

The air samples were collected using a SKC AirChek® sampling pump. Pre- and post-calibration of air flow rates were measured and recorded for the sample using the BIOS DryCal Model DC-I. The field notes and analytical laboratory results and chain-of-custody forms corresponding to these samples are provided in Appendix 3. Table 2 includes the results and a comparison to the respective PEL.

Table 2: General Area Sample Results, September 2, 2008.

Sample Number	Area	Concentration	OSHA Action Level	OSHA PEL	Exceed PEL or TLV? (Yes / No)
Wtn-A1	Maintenance/Custodial office	< 3.0 µg/m3	30 µg/m3	50 µg/m3	No
Wtn-A2	Commander's office	< 3.0 µg/m3	30 µg/m3	50 µg/m3	No

There was no lead detected on the field blank

The results of the area air samples indicated that no detectable airborne concentrations of lead were present on the day of EORM's site visit.

Facility Inspection and Employee Concerns

The Walton Readiness Center is a one-story facility with no full-time National Guardsmen. There is one State employee who works to maintain the facility. The facility has a small garage attached with three vehicle maintenance bays. The former indoor firing range was converted to a locker room in 2003.

The general conditions of the facility were as follows:

- There was noticeable amount of dust on surfaces throughout the facility
- Mr. Non-Responsive, State facilities worker, reported that the heating air-handling units (AHUs) in the drill hall were used only during the winter months. The return air grilles (~ 2 feet off of the floor) and the supply air grilles (~20 feet from floor) were significantly loaded with dust.
- AHU 1 and 3 are currently not operational. A request has been made for both to be repaired
- The AHUs are recirculating units. Mr. Non-Responsive reported that they do not have filters.

Ventilation System Evaluation

There are no rooms, such as a battery room or film room that would require ventilation. There is an attached maintenance shop which does require ventilation. The maintenance shop is discussed below in the section entitled Evaluation of the Attached Garage.

The general heating, ventilating, and air-conditioning (HVAC) for the Walton Readiness Center is accomplished through a combination of a boiler system for heating (baseboard heating in offices and overhead AHUs in drill hall) and two portable air-conditioners that are kept in the offices for cooling during summer months. According to Mr. Non-Responsive only AHU-3 is currently operational.

Direct-reading measurements for temperature, relative humidity, and carbon dioxide (CO_2) were performed using a Q-Trak Plus Indoor Air Quality Monitor (Model #s 8551). This instrument detects CO_2 using a selective infrared absorption method and displays airborne concentrations in units of ppm. This instrument also measures temperature and relative humidity using electrical sensing methods. It displays temperature in degrees Fahrenheit and relative humidity in percent. The manufacturer's recommended yearly calibration was last performed in January 2008.

Table 3: Indoor door air quality measurements, September 2, 2008.

Location	Number of Occupants	Temp (^{0}F)	RH (% RH)	CO_2 (ppm)
State storage	0	75	61	389
Drill hall	0	74	60	334
State office	1	75	64	434
Outdoors	---	76	64	391

The primary cursors for indoor thermal comfort are temperature and relative humidity. Air temperature is recommended to range from 73 to 79°F during summer and from 68 to 75°F during winter (ASHRAE 55-1992) for indoor office environments. This assumes that building occupants are dressed in normal garments and perform mainly sedentary activities. The results indicated that the indoor temperature ranged from 74 to 75°F, which was within the recommended ranges.

The relative humidity (RH) inside buildings should be maintained between 30 and 60% (ASHRAE - 62-2001). When the RH in indoor environments exceeds 60%, microbial growth may occur; whereas, relative humidity below 30% may cause the drying of mucous membranes and discomfort. The results indicated that the indoor relative humidity ranged from 60% to 64% indoors, which was above the recommended guideline

The ASHRAE Standard 62-2001, *Ventilation for Acceptable Indoor Air Quality,* has established a reference level based upon human comfort criteria of a maximum CO_2 concentration of 700 ppm above existing outdoor concentrations, below which is suggestive of an adequate quantity of outdoor air supply ventilation to the occupied space. The results indicated the indoor concentration of CO_2 ranged from 334 ppm to 434 ppm and the concurrent outdoor concentration was 391 ppm. This indicates there was sufficient outdoor air supply to the occupied space.

Lighting Survey

The lighting at the Walton Readiness Center consists of metal halide lamps and fluorescent lights. The metal halide lamps provide lighting for the Drill Hall and the fluorescent lights provide the lighting in the rest of the building. A lighting survey was conducted using a Cooke Corporation Cal-Light 400L, serial number 1C040084L. The Cal-Light was calibrated by the manufacturer.

The lighting measurements were compared to the Recommended Practice for Lighting Industrial Facilities RP-7-01 and for Office Building RP-1-04. Both RP-7 and RP-1 are approved by the American National Standards Institute (ANSI) and the Illuminating Engineering Society of North America (IESNA). Table 4 below, summarizes the results of the lighting survey.

Table 4: Lighting Survey Results, September 2, 2008

Location	Measurement (fc)	RP-7 Recommended Illuminance Values1 (fc)	Meets RP-7 Values? (Yes/No)	Comments
Orderly room	85-200	30	Yes	
1st Sgt office	70-86	50	Yes	
Commanders office	53-70	50	Yes	
Lt's office	50-97	50	Yes	
Hall by Commanders office	20-104	5	Yes	
Copy room	22-98	10	Yes	
Operations office	44-85	50	Yes	
Classroom 1	68-102	50	Yes	
Kitchen	40-96	30-50	Yes	
Handicap bathroom	57-65	7	Yes	
Hall by kitchen	40-60	5	Yes	
Women's bathroom	12-38	7	Yes	
Men's bathroom	31-72	7	Yes	
Classroom 2	14-115	50	Yes	Several light bulbs out
Garage	75-189	75	Yes	
Maintenance/custodial office	31-52	30	Yes	
NBC supply room	25-49	30	Yes	
Boiler room	4-16	30	Yes	
State storage	2-10	10	No	Light bulbs out
Locker room	16-52	7	Yes	
Drill hall	96-175	30	Yes	

fc = footcandles

[1] The recommended illuminance values were obtained from the ANSI/IESNA RP-1-04 (Office Lighting) and RP-7-01 (Industrial Lighting)

According to RP-1-04 and RP-7-01, the lighting survey results indicate sufficient lighting at most locations throughout the Walton Readiness Center. There were light bulbs out in two rooms, classroom 2 and the State storage room. For the most part the lighting in classroom 2 remained sufficient with the exception of directly under the burned out bulb. The State storage room had insufficient lighting.

Evaluation of Attached Garage

Operational Description

The Walton Readiness Center operates a small garage located in the southeast corner of the building. The garage is used for a variety of maintenance activities including, oil changes, brake changes, and general repairs. The garage is not equipped with local exhaust ventilation for any tasks.

Hazards Present and Controls

Based on the materials found in the garage there are several potential hazards associated with this garage. As with most of the field maintenance shops the use of pneumatic tools and other tools such as grinders can create hazardous noise.

Additional hazards that may be present include:

- Inhalation of vehicle exhaust or chemicals used for degreasing
- Inhalation of asbestos fibers that may be present in brake pads

Ventilation System Evaluation

The garage attached to the Walton Readiness Center is not equipped with an exhaust ventilation system. It was reported that the maintenance personal use 3 inch flexible duct to place over the tailpipe of the vehicle and extend out the overhead door. Photograph 6 of Appendix 2 shows the interior of the garage.

Lighting

The light readings are provided in the lighting survey section above.

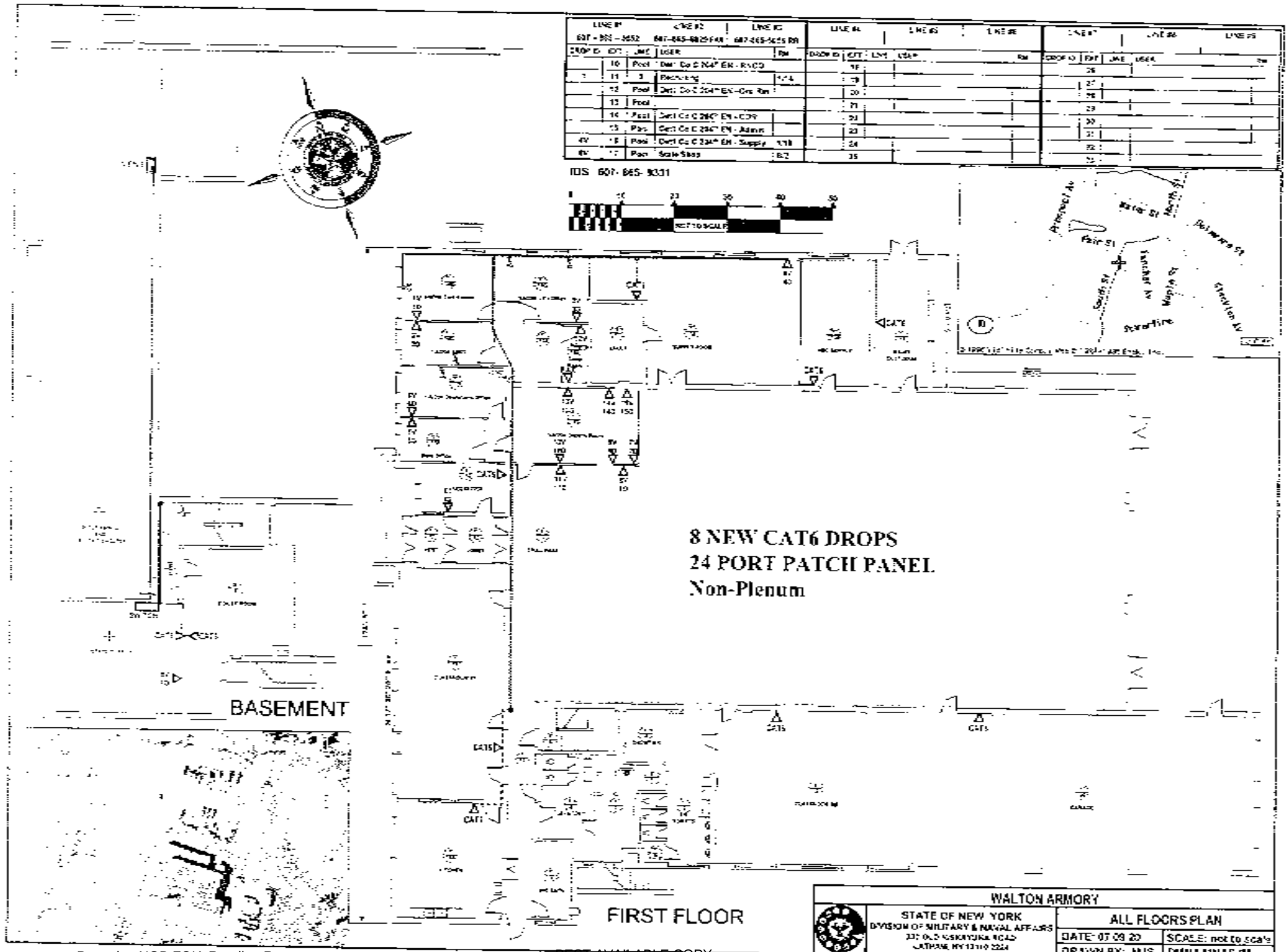
Conclusions and Recommendations

Based on the observations and results of the industrial hygiene survey, EORM has concluded the following:

- The surface wipe sample results indicated that lead is present on surfaces of the three AHUs in the drill hall as well as on the floor of the drill hall. Surface lead was identified on a toolbox in the garage, a window sill in classroom 1, and on surfaces within the locker room. EORM recommends that the AHUs and surfaces within the drill hall be cleaned by a contractor specializing in lead decontamination. In addition, other items identified as having surface lead contamination should also be decontaminated.
- The area air samples indicated that the surface lead was not airborne on the day of EORM's site visit. However, there were no guardsmen in the readiness center at the time of EORMs site visit. Additional activities that occur during drills may disturb the surface lead. Therefore all lead contaminated surfaces should be cleaned.
- For the most part, the lighting survey results indicate sufficient lighting throughout the Walton Readiness Center, with the exception of the State storage room. EORM recommends replacing the burned out light bulbs in the State storage room and in classroom 2.
- The attached garage does not have a vehicle exhaust ventilation system to accommodate working on vehicles while the engine is running. The current system is to place flexible duct over the tail pipe and run the duct work out through the overhead door. EORM recommends that should maintenance activities be required to occur with the engines running then a vehicle exhaust ventilation system should be installed.

The results of this survey should be communicated to the participants as well as other people who perform similar job duties that did not participate.

Appendix 1 – Walton Readiness Center Floor Plan



Appendix 2 – Photographs

Photograph 1: Exterior of readiness center

Photograph 2: Battery charger – reportedly no longer in use

Photograph 3: **Former indoor firing range – now a locker room**

Photograph 4: **Drill hall with AHUs**

Photograph 5: Drill hall

Photograph 6: Garage

Appendix 3 – Laboratory Analytical Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory-Walton	**Chain Of Custody:**	503198
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	55 South Street Walton NY	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	NATL0004	**Person Submitting:**	Non-Responsive
		P.O. Number:	Not Provided	**Date Analyzed:**	**Report Date:** 10/7/2008

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0900907	WTN-01	Flame	Wipe	****	0.108	110	ug/ft²		590	ug/ft²
0900908	WTN-02	Flame	Wipe	****	0.108	110	ug/ft²		400	ug/ft²
0900909	WTN-03	Flame	Wipe	****	0.108	110	ug/ft²		2500	ug/ft²
0900910	WTN-04	Flame	Wipe	****	0.108	110	ug/ft²		300	ug/ft²
0900911	WTN-05	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²
0900912	WTN-06	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²
0900913	WTN-07	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²
0900914	WTN-08	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²
0900915	WTN-09	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²
0900916	WTN-10	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²
0900917	WTN-11	Flame	Wipe	****	0.108	110	ug/ft²		130	ug/ft²
0900918	WTN-12	Flame	Wipe	****	0.108	110	ug/ft²		160	ug/ft²
0900919	WTN-13	Flame	Wipe	****	0.108	110	ug/ft²		2400	ug/ft²
0900920	WTN-14	Flame	Wipe	****	0.108	110	ug/ft²		2400	ug/ft²
0900921	WTN-15	Flame	Wipe	****	0.108	110	ug/ft²	<	110	ug/ft²
0900922	WTN-FB	Flame	Wipe Blank	****	N/A	12	ug	<	12	ug
0900923	WTN-A1	Flame	Air	0	N/A	3	ug/m³	<	3	ug
0900924	WTN-A2	Flame	Air	0	N/A	3	ug/m³	<	3	ug
0900925	WTN-A3	Flame	Air Blank	0	N/A	3	ug/m³	<	3	ug

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	National Guard Armory-Walton	**Chain Of Custody:**	503198
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	55 South Street Walton NY	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	NATL0004	**Person Submitting:**	Non-Responsive
		P.O. Number:	Not Provided	**Date Analyzed:**	**Report Date:** 10/7/2008

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.
NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analyst: Non-Responsive

Technical Manager: Non-Responsive

OWI (410) 247-2024 127511 **503198**

(Please Refer To This Number For Inquires)

P. 1

AMA Analytical Services, Inc.
Focused on Results
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: NGB-IHNE
3. Address 2: 301-1H Old Bay Lane
4. Address 3: Havre de Grace, MD 21078
5. Phone #: 410.942.0273 Fax #:

Submittal Information:
1. Job Name: National Guard Armory - Walton
2. Job Location: 55 South Street Walton NY
3. Job #: NATL0007 P.O. #:
4. Contact Person [redacted] @ phone #: 857 [redacted] 3341
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
☐ Immediate Date Due:
☐ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
☐ Immediate ☐ Next Day ☐ 2 Day
☐ 3 Day ☒ 5 Day + Date Due:
☐ Results Required By Noon (Every Attempt Will Be Made to Accomodate)

REPORT TO:
☐ Include COC/Field Data Sheets with Report
☐ Email: @
☐ Fax:
☐ Verbals:

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity ___ in a 25mm 37mm
☐ NIOSH 7400 ___ (QTY)
☐ Fiberglass ___ (QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity ___ in a 25mm 37mm
☐ AHERA ___ (QTY)
☐ NIOSH 7402 ___ (QTY)
☐ Other (specify ___) ___ (QTY)

PLM Bulk
☐ EPA 600 – Visual Estimate ___ (QTY)
☐ EPA Point Count ___ (QTY)
☐ NY State Friable 198.1 ___ (QTY)
☐ Grav. Reduction ELAP 198.6 ___ (QTY)
☐ Other (specify ___) ___ (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield ___ (QTY)
☐ NY State PLM/TEM ___ (QTY)
☐ Residual Ash ___ (QTY)

TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust ___ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ___ (QTY)
☐ Quan. (s/area)Dust D6480-99 ___ (QTY)

TEM Water
☐ Qual. (pres/abs) ___ (QTY)
☐ ELAP 198.2/EPA 100.2 ___ (QTY)
☐ EPA 100.1 ___ (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples ___ °C)

Lead Analysis
☐ Paint Chip ___ (QTY)
☒ Dust Wipe (wipe type Ghost) 16 (QTY)
☒ Air 3 (QTY)
☐ Soil/Solid ___ (QTY)
☐ TCLP ___ (QTY)
☐ Drinking Water ___ (QTY)
☐ Waste Water ___ (QTY)
☐ Dust Wipe Furnace (wipe type ___) ___ (QTY)

Mold - Direct Microscopic Analysis
☐ Collection Apparatus for Spore Traps:
☐ Spore-Trap ___ (QTY) ☐ Bulk ___ (QTY)
☐ Surface Swab ___ (QTY) ☐ Surface Vacuum Dust ___ (QTY)
☐ Surface Tape ___ (QTY) ☐ Other (Specify ___) ___ (QTY)

SAMPLE INFORMATION

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
	Wtn-01	9/3		100cm²				X				X				
	Wtn-02	↓		↓				↓				↓				
	Wtn-03															
	Wtn-04															
	Wtn-05															
	Wtn-06															
	Wtn-07															
	Wtn-08															
	Wtn-09															
	Wtn-10															
	Wtn-11															
	Wtn-12	↓		↓				↓				↓				

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: 10/10/08 Contact: MV By MS
Client will calculate mg/L himself. Report w/o L.
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 9 / 10 / 08 @ 1000 Via: Fed EX By (Print) [redacted]
2. Date/Time Analyzed: ___ / ___ / ___ @ ___ By (Print) Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AMA Analytical Services, Inc.
Focused on Results
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 503198 P 2

Mailing/Billing Information:

1. Client Name: See p. 1
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: Fax #:

Submittal Information:

1. Job Name: See p. 1
2. Job Location:
3. Job #: P.O. #:
4. Contact Person: @ phone #
5. Submitted by: Signature:

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
☐ Immediate Date Due:
☐ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
☐ Immediate ☐ 3 Day
☐ Next Day ☐ 5 Day +
☐ 2 Day Date Due:
☐ Results Required By Noon (Every Attempt Will Be Made to Accomodate)

REPORT TO:
☐ Include COC/Field Data Sheets with Report
☐ Email: @
☐ Fax:
☐ Verbal:

Asbestos Analysis

PCM Air - Please Indicate Filter Type
PC MCE Porosity mm 25mm 37mm
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)

TEM Air - Please Indicate Filter Type
PC MCE Porosity mm 25mm 37mm
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☐ EPA 600 - Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Gray Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☐ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Lead Analysis
☐ Paint Chip (QTY)
☒ Dust Wipe (wipe type Ghost) 16 (QTY)
☒ Air 3 (QTY)
☐ Soil/Solid (QTY)
☐ TCLP (QTY)
☐ Drinking Water (QTY)
☐ Waste Water (QTY)
☐ Dust Wipe Furnace (wipe type) (QTY)

Mold - Direct Microscopic Analysis
☐ Collection Apparatus for Spore Traps
☐ Spore-Trap (QTY) ☐ Bulk (QTY)
☐ Surface Swab (QTY) ☐ Surface Vacuum Dust (QTY)
☐ Surface Tape (QTY) ☐ Other (Specify) (QTY)

CLIENT ID NUMBER	SAMPLE INFORMATION: SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: PCM	TEM	PLM	LEAD	MOLD	ASB	BULK	DUST	WATER	TAPE	SWAB	MATRIX: AIR	BULK	DUST	WATER	TAPE	SWAB
	Wtn-13	9/3		100cm²				X				X									
	Wtn-14																				
	Wtn-15																				
	Wtn-FB			—																	
	Wtn-A1																				
	Wtn-A2																				
	Wtn-AFR																				

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: / / @ Via By (Print) Sign:
2. Date/Time Analyzed / / @ By (Print) Sign:
3. Results Reported To: Via Date: / / Time:
4. Temp

Appendix 4 – References

American Conference of Governmental Industrial Hygienists (ACGIH). 2007. *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*.

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62.1-2007, Ventilation for Acceptable Indoor Air Quality.

Code of Federal Regulations (CFR) 29 Part 1910.1000 Air Contaminants.

DODI 6055.1, DOD SO4 Program, 19 August 1998.

RP-1-2004, Office Lighting, ANSI/IESNA

RP-7-2001, Industrial Lighting, ANSI/IESNA, change 20 July 2004.

UFC 3-410-01FA, Unified Facilities Criteria (UFC) for Heating, Ventilating, and Air Conditioning, Department of Defense, 15 May 2003.

National Guard Region North

National Guard Readiness Center
Industrial Hygiene Evaluation
Walton Readiness Center
Walton, NY 13856-1438

Prepared for:

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078

Attn: Non-Responsive

Prepared by:

Bonus Environmental, LLC
P.O. Box 121
Mt. Pleasant, Michigan 48804

Project No. 1061-15
January 30, 2013

Bonus Environmental, LLC

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APPENDICES

January 30, 2013
Project No. 1061-15

National Guard Region North
Industrial Hygiene Office
301 Old Bay Lane
Havre De Grace, MD 21078-4003

Attn: Non-Responsive

Project: Industrial Hygiene Evaluation
Walton Readiness Center, Walton, NY 13856-1438

1.0 - EXECUTIVE SUMMARY

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Walton Readiness Center located at 55 South Street in Walton, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. The following industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Non-Responsive on November 15, 2012:

- Indoor Air Quality
- Lead Wipe & Bulk Sampling
- Illumination
- Ergonomics
- Evaluation of the physical condition of the facility in regards to peeling paint, asbestos containing materials, water damage or mold problems, and housekeeping practices.

The Walton Readiness Center was constructed in 1964, and is an Army National Guard armory comprised of offices, locker rooms, storage rooms, a classroom, a drill hall, a kitchen, a boiler room, a dining room, a garage, an external flammables storage shed, and a former indoor firing range (currently used as a locker room). The garage is mainly used for storage, with no vehicle exhaust system, although the facility caretaker reports that welding occurs in the garage (using a portable welding cart) very infrequently. The point of contact for the approximately 19,400 ft² Walton Readiness Center is Ms. Joann Ferrara. Two (2) full-time administrative personnel are employed at the Walton Readiness Center. Health and Safety programs reviewed during this survey included Spill Prevention, Radiation Safety, Hazcom, and Safety Risk Management. A shop diagram depicting the locations of the operations and air flow patterns identified during this industrial hygiene evaluation is attached to this report as Appendix A.

The National Guard Bureau Region North Industrial Hygiene Office provided governmental furnished equipment and sampling media required to perform the industrial hygiene evaluation. Chain of custody forms for laboratories approved by the National Guard Bureau Region North Industrial Hygiene Office were provided with the sampling media. All samples collected during this industrial

hygiene evaluation were sent to the National Guard Bureau Region North Industrial Hygiene Office approved laboratories for analysis.

2.0 – LEAD SAMPLING

2.1 – Lead Wipe Sampling

Lead wipe sampling was performed according to the Environmental Protection Agency (EPA) method 600/R-93/200(M)-7420 (Atomic Absorption - Flame). Thirteen (13) wipe samples and one (1) field blank were sent under chain-of-custody procedures to AMA Analytical Services, Inc., an American Industrial Hygiene Association (AIHA) accredited laboratory located in Lanham, Maryland. The U.S. Department of Labor (USDOL) and the Occupational Safety and Health Administration (OSHA) do not have a promulgated standard for lead surface contamination; however OSHA has provided an interpretive level of 200 micrograms per square foot (µg/ft²) to assess the housekeeping requirements of "as free as reasonably practicable". This interpretation is presented in OSHA Industrial Hygiene Technical Manual (TED 01-00-015; 1/20/1999), and in a letter of interpretations dated 1/13/2003, and subsequently issued to public domain. NG Pam 420-15 addresses the conversion and remediation of former indoor firing ranges. The following table outlines the locations and analytical results for the lead wipe samples collected during this project.

Army National Guard – Walton Readiness Center
Lead Wipe Sample Results

Sample #	*Sample Date*	*Sample Location*	*Sample Area (ft^2)*	*Sample Result ($\mu g/ft^2$)*
WaltonRC-LW-1	11-15-12	Field Blank	---	< 12 μg
WaltonRC-LW-2	11-15-12	Drill hall, north wall, on AED case	0.111	560
WaltonRC-LW-3	11-15-12	Drill hall, west wall, on AHU motor control box	0.111	< 110
WaltonRC-LW-4	11-15-12	Drill hall, east corner, on weightlifting machine	0.111	230
WaltonRC-LW-5	11-15-12	Drill hall, along east wall, on fire extinguisher	0.111	130
WaltonRC-LW-6	11-15-12	Drill hall, center, on floor	0.111	1,600
WaltonRC-LW-7	11-15-12	Locker room (former indoor firing range), east end, on floor	0.111	< 110
WaltonRC-LW-8	11-15-12	Locker room (former indoor firing range), center of room, top of locker	0.111	210
WaltonRC-LW-9	11-15-12	Locker room (former indoor firing range), west end, on floor	0.111	< 110
WaltonRC-LW-10	11-15-12	Kitchen, north corner, top of paper towel dispenser	0.111	< 110

Army National Guard – Walton Readiness Center *Lead Wipe Sample Results*				
Sample #	***Sample Date***	***Sample Location***	***Sample Area (ft^2)***	***Sample Result ($\mu g/ft^2$)***
WaltonRC-LW-11	11-15-12	Classroom, east side, supplied air grill	0.111	< 110
WaltonRC-LW-12	11-15-12	Garage, top of welding cart tool box	0.111	3,500
WaltonRC-LW-13	11-15-12	Garage, south end, on floor	0.111	920
WaltonRC-LW-14	11-15-12	Commander's office, northeast corner, on window sill	0.111	< 110

Surface cleanliness threshold = < 200 micrograms per square foot (µg/ft²)

The former indoor firing range is currently used as a locker room. It was stated to Bonus Environmental, LLC that it was remediated "several" years ago, and it was also painted "a couple" of years ago. It is uncertain whether it was remediated to the protocols specified in NG Pam 420-15. Remediation wipe sample results were not posted, nor were any signs posted restricting access to the area.

3.0 - PHYSICAL CONDITION OF FACILITY / PERSONNEL CONCERNS

3.1 - Lead Based Paint

During the industrial hygiene evaluation of the Walton Readiness Center, Bonus Environmental, LLC performed a visual inspection of the facility in regards to lead based paint. Bonus Environmental, LLC identified one area of peeling paint which could potentially pose a lead exposure hazard. Bonus Environmental, LLC identified peeling paint in the following area:

- Approximately 800 ft² of peeling beige paint on the ceiling of the garage.

One (1) paint chip samples was collected and sent under chain-of-custody procedures to AMA Analytical Services, Inc., an AIHA accredited laboratory located in Lanham, MD. See table below for sample information:

Army National Guard – Walton Readiness Center *Paint Chip Sample*				
Sample #	*Sample Location*	*Color*	*Analytical Reporting Limit (%)*	*Analytical Results (%)*
WaltonRC-PC-1	Garage	Beige	0.0088	0.031

Analysis indicated that the peeling paint collected contained detectable levels of lead. The paint is therefore considered to be lead-based paint. The OSHA Lead in Construction Standard, 29 CFR 1926.62 does not assign a numerical value of which must be present within the paint to be considered

lead based paint. Paints which contain any detectable level of lead shall be treated and handled as lead based paint. Housing and Urban Development (HUD) defines lead based paint as having greater than 0.5% lead by weight. Paint chip sample results are attached to this report as Appendix B.

3.2 – Presumed Asbestos Containing Materials

During the industrial hygiene evaluation of the Walton Readiness Center, Bonus Environmental, LLC performed a visual inspection to identify presumed asbestos containing materials (PACM) and, if found, to note their condition. Bonus Environmental, LLC did not identify any PACM's that were considered to be in poor or damaged condition.

3.3 - Water Damage/Mold Growth

During the industrial hygiene evaluation of the Walton Readiness Center, Bonus Environmental, LLC performed a visual inspection to report the location and perform an evaluation of any water damaged building materials and/or visible mold problems. Bonus Environmental, LLC did not identify any water-damaged materials.

3.4 - Housekeeping

During the industrial hygiene evaluation of the Walton Readiness Center, Bonus Environmental, LLC performed an evaluation of the housekeeping practices. Bonus Environmental, LLC found the housekeeping practices within Walton Readiness Center facility in good order, with the exception of residual lead dust concentrations.

3.5 – Employee Interviews

During the industrial hygiene evaluation of the Walton Readiness Center, Bonus Environmental, LLC performed interviews and made observations to determine if the work activities being performed possessed any ergonomic concerns. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

3.6 – Indoor Air Quality

During the industrial hygiene evaluation of the Walton Readiness Center, Bonus Environmental, LLC measured temperature, relative humidity, carbon monoxide (CO), and carbon dioxide (CO_2) throughout the facility. A calibrated TSI Q-Trak Plus Model 7575 Indoor Air Quality Monitor equipped with a Q-Trak Probe 982 was utilized to record indoor air quality measurements.

Carbon dioxide is a natural component of air and the amount of CO_2 in a given air sample is commonly expressed as parts per million (ppm). The outdoor air in most locations contains about 380 ppm carbon dioxide. Higher outdoor CO_2 concentrations can be found near vehicle traffic areas, industry and sources of combustion. The concentrations of CO_2 found in most offices are well below the OSHA Permissible Exposure Limit (PEL) of 5,000 ppm when averaged over an 8-hour time period for an industrial workplace. While levels below 5,000 ppm are considered to pose no serious health threat, studies have indicated that individuals in offices with elevated CO_2 concentrations tend to report drowsiness, lethargy and a general sense that the air is stale. Ventilation rates for office spaces are defined by various codes and standards. The most widely accepted standard is the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. According to ASHRAE Standard 62.1-2010, CO_2 concentrations below 700 ppm above the outdoor level are

considered to indicate adequate ventilation and provide human comfort. The CO_2 measurements collected during this industrial hygiene evaluation ranged from 388 ppm to 562 ppm and indicate adequate ventilation within the facility.

Carbon monoxide is a colorless, odorless, poisonous gas that results from the incomplete burning of common fuels such as natural or liquefied petroleum gas, oil, wood or coal. When carbon monoxide is inhaled, it enters the blood stream and reduces the ability of the blood to carry oxygen to vital organs, such as the heart and brain. Because it is impossible to see, taste or smell the toxic fumes, CO can harm you before you are aware it is in your work area. At lower levels of exposure, CO causes mild effects that are often mistaken for the flu. These symptoms include headaches, dizziness, disorientation, nausea and fatigue. The effects of CO exposure can vary greatly from person to person depending on age, overall health and the concentration and length of exposure. The OSHA has established a permissible exposure limit (PEL) of 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8-hour time period. The peak CO level for employees is 200 ppm. The CO measurements collected during this industrial hygiene evaluation all indicated 0.0 ppm. CO levels were below the OSHA PEL during this industrial hygiene evaluation.

During the industrial hygiene evaluation of the Walton Readiness Center, Bonus Environmental, LLC collected temperature measurements. Temperature measurements throughout the common areas of the facility routinely occupied by employees ranged from 61.7ºF to 69.1ºF and are not considered to be within an acceptable range outlined within ASHRAE Standard 55-2010.

During the industrial hygiene evaluation of the Walton Readiness Center, Bonus Environmental, LLC collected relative humidity measurements. Relative humidity measurements throughout common areas of the facility routinely occupied by employees ranged from 23.7% to 42.2%. Indoor air quality measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Walton Readiness Center
Indoor Air Quality Measurements

Location	*CO_2 (ppm)*	*CO (ppm)*	*Relative Humidity (%)*	*Temperature (ºF)*
Outdoors, NW side of building (partly sunny)	388	0.0	47.5	42.6
Locker room	408	0.0	38.9	**62.8**
Drill hall	418	0.0	37.7	**61.7**
Kitchen	410	0.0	34.6	**65.8**
Dining room	417	0.0	31.1	68.7
Classroom	438	0.0	36.7	69.1
Garage	404	0.0	23.7	67.6
Maintenance office	412	0.0	30.6	**64.6**
Orderly room	562	0.0	40.2	67.6
Recruiter's office	411	0.0	29.8	66.9
Commander's office	532	0.0	42.2	67.5

Required/Recommended Values
CO_2 *- OSHA PEL = 5,000 parts per million (ppm) and ASHRAE Standard 62.1-2010 = no greater than 700 ppm above outdoor*
CO *- OSHA PEL = 50 ppm and OSHA Ceiling Limit = 200 ppm*
Temperature *- ASHRAE Standard 55-2010 = between approximately 67 and 82 °F.*
RH *- ASHRAE Standard 62.1-2010 = limited to* < 65%

4.0 – LIGHTING

Utilizing a properly calibrated Cooke Corporation cal-Light 400 light meter, Bonus Environmental, LLC collected illumination readings throughout the Walton Readiness Center. Illumination measurements recorded during this industrial hygiene evaluation are summarized in the table below.

Army National Guard – Walton Readiness Center Lighting Measurements			
Location	*Measurement in Foot Candles*	*Requirement in Foot Candles*	*Requirement Met?*
Boiler room	33.4	30	Yes
Basement, State storage	30.6	30	Yes
Locker room (former indoor firing range)	43.9	7	Yes
Stairwell to basement	36.4	5	Yes
Ground floor hallway	25.7	5	Yes
Kitchen	92.9	50	Yes
Handicapped restroom	59.0	5	Yes
Women's restroom	41.9	5	Yes
Women's shower	68.8	7	Yes
Dining room	78.4	10	Yes
Drill hall	134.1	30	Yes
Men's restroom	55.3	5	Yes
Men's shower	4.9	7	No
Classroom	32.9	30	Yes
Garage	150.2	30	Yes
Maintenance office	90.4	50	Yes
NBC room (storage)	22.4	30	No
Supply room (storage)	50.3	30	Yes
Arms room (vault)	Inaccessible		
Orderly room	123.5	50	Yes
Copy room	120.3	10	Yes
Lt's. office	113.8	50	Yes
Commander's office	90.2	50	Yes
1st Sgt's office	85.7	50	Yes
Hallway	108.2	5	Yes
Readiness office	148.2	50	Yes
State office	114.0	50	Yes
Recruiter's office	40.1	50	No
Exterior flammables storage shed	No lighting		

Lighting levels were compared to the levels outlined within the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-04 Office Lighting Handbook, and the ANSI/IESNA RP-7-01 Lighting Industrial Facilities Handbook. Areas within the facility which did not meet the foot candle requirements are identified with a "NO" within the "Requirement Met?" column. It is recommended that illumination be improved in all the areas that did not meet the requirements. Improving illumination can be achieved by replacing burned-out lamps/bulbs, cleaning fixtures, relocating detailed work activities to more illuminated areas, and using supplemental task lighting.

5.0 - CONCLUSION & LIMITATIONS

Bonus Environmental, LLC was contracted by the National Guard Bureau Region North Industrial Hygiene office to identify and measure the existence and extent of potentially hazardous operations or conditions at the Walton Readiness Center located at 55 South Street in Walton, NY. The purpose of this evaluation was to generate or to update a previous baseline evaluation so that employee exposure history can be provided to each civilian and military employee. Industrial hygiene conditions were evaluated during this industrial hygiene evaluation performed by Bonus Environmental, LLC representative Jeff Walworth on November 15, 2012.

The results/findings of this industrial hygiene evaluation are summarized below.

1. Lead wipe sample results collected within the Walton Readiness Center were above the OSHA interpretive level of 200 µg/ft², as well as the 200 µg/ft² threshold established in NG Pam 420-15 in several of the tested areas;

2. Bonus Environmental, LLC identified one area of peeling paint which contained detectable levels of lead, potentially posing a lead exposure hazard.

3. Bonus Environmental, LLC did not identify any PACM that was considered to be in poor or damaged condition.

4. Bonus Environmental, LLC did not identify any water-damaged or moldy building materials.

5. Bonus Environmental, LLC found the housekeeping practices within Walton Readiness Center in good order, with the exception of residual lead dust concentrations.

6. Following the interviews and observations, no ergonomic and or indoor air quality concerns were identified.

7. Bonus Environmental, LLC measured temperature, relative humidity, CO, and CO_2 throughout the Walton Readiness Center. All were found to be within their acceptable ranges/limits; with the exception of several temperature readings.

8. Areas within the Walton Readiness Center facility were identified as improperly illuminated.

9. Health and Safety policies reviewed at the Walton Readiness Center included Spill Prevention, Radiation Safety, Hazcom, and Safety Risk Management. All were found to meet regulatory requirements.

Bonus Environmental, LLC has provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Region North -

Industrial Hygiene Office. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during Bonus Environmental, LLC's inspection of the site.

It has been a pleasure to be of assistance to you. Please contact us if you have any questions concerning this report or if we can be of any further assistance in any other environmental or occupational health matter.

Sincerely,

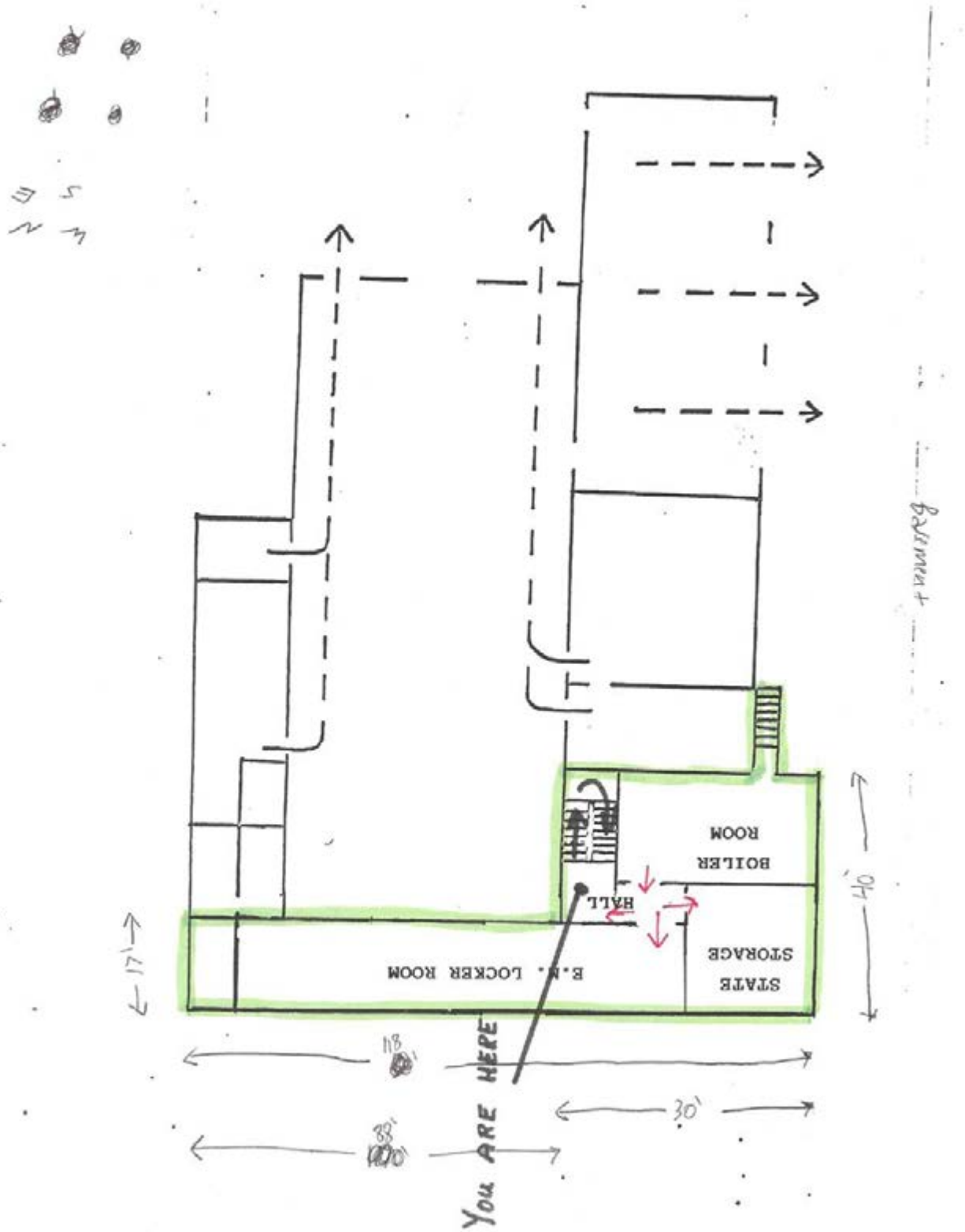
Non-Responsive

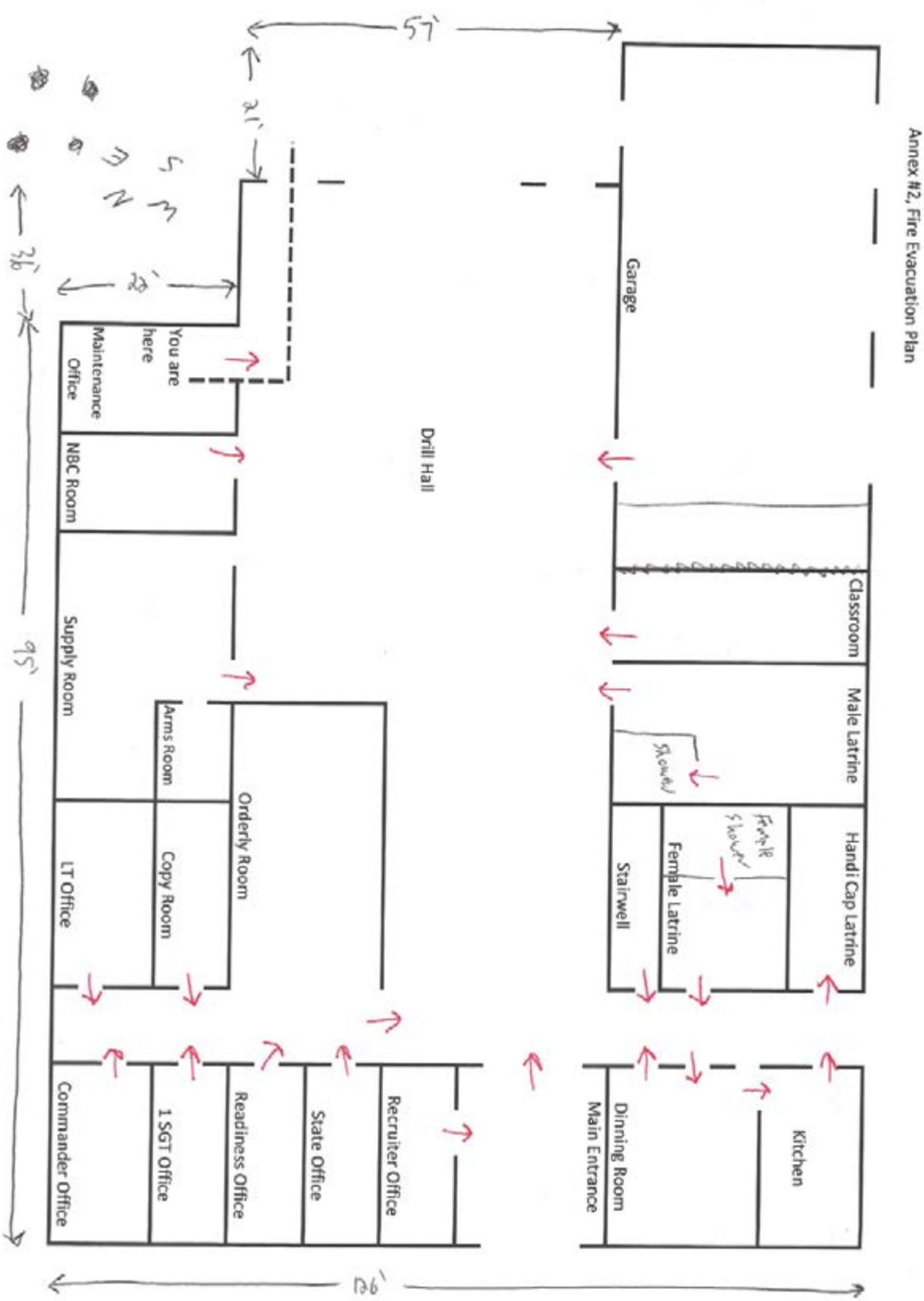
Principal
Bonus Environmental, LLC

Walton RC_12_Report.docx

Appendix A

Shop Diagram and Air Flow Patterns


BOILER ROOM
HALL
STATE STORAGE
E.M. LOCKER ROOM
40'
17'
118'
30'
88'
YOU ARE HERE



Appendix B

Lead Sampling Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISO/IEC 17025:2005 www.aihaaccreditedlabs.org LAB #100476

Client:	National Guard Bureau	**Job Name:**	Walton RC	**Chain Of Custody:**	514554
Address:	301-IH Old Bay Lane, Attn: ARNG-CIG-P, State Military Reservation	**Job Location:**	Walton, NY	**Date Submitted:**	11/21/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/28/2012 **Report Date:** 11/28/2012
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13016590	WaltonRC-PC-1	Flame	Paint Chip	****	N/A	0.0088	%Pb		0.031	%Pb	
13016591	WaltonRC-LW-1	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13016592	WaltonRC-LW-2	Flame	Wipe	****	0.111	110	ug/ft^2	62	560	ug/ft^2	
13016593	WaltonRC-LW-3	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016594	WaltonRC-LW-4	Flame	Wipe	****	0.111	110	ug/ft^2	25	230	ug/ft^2	
13016595	WaltonRC-LW-5	Flame	Wipe	****	0.111	110	ug/ft^2	14	130	ug/ft^2	
13016596	WaltonRC-LW-6	Flame	Wipe	****	0.111	110	ug/ft^2	180	1600	ug/ft^2	
13016597	WaltonRC-LW-7	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016598	WaltonRC-LW-8	Flame	Wipe	****	0.111	110	ug/ft^2	24	210	ug/ft^2	
13016599	WaltonRC-LW-9	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016600	WaltonRC-LW-10	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016601	WaltonRC-LW-11	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13016602	WaltonRC-LW-12	Flame	Wipe	****	0.111	110	ug/ft^2	390	3500	ug/ft^2	
13016603	WaltonRC-LW-13	Flame	Wipe	****	0.111	110	ug/ft^2	100	920	ug/ft^2	
13016604	WaltonRC-LW-14	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	

An AIHA (#100476) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY ISO/IEC 17025:2005 www.aihaaccreditedlabs.org LAB #100476

Client:	National Guard Bureau	**Job Name:**	Walton RC	**Chain Of Custody:**	514554
Address:	301-IH Old Bay Lane, Attn: ARNG-CIG-P, State Military Reservation	**Job Location:**	Walton, NY	**Date Submitted:**	11/21/2012
	Havre de Grace, Maryland 21078	**Job Number:**	1061-15	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	11/28/2012 **Report Date:** 11/28/2012
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7010; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Non-Responsive

Ana

Technical Manager: Non-Responsive

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AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514554

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0278 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: Walton RC
2. Job Location: Walton, NY
3. Job #: 10 44 16 W912K6-09-A-0003
4. Contact Person: [redacted] @ [redacted]
5. Submitted by: [redacted] Signature: [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due: ☐ 24 Hours Time Due: Comments:	☐ Immediate ☐ Next Day ☐ 2 Day ☐ 3 Day ☒ 5 Day + Date Due: 11/30/12 ☐ Results Required By Noon	☒ Include [redacted] with Report ☒ Email: [redacted] bonusenvironmental.com ☒ Fax: [redacted] us.army.mil ☒ Verbal: [redacted] us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction/ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)
TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples °C)
If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 1 (QTY)
☒ *Pb Dust Wipe (wipe type: Ghost) 14 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WIPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
WaltonRC-Pc-1	Beige Paint, garage	11-15-12					X			X				Date/Time: Contact: By:
*	SEE ATTACHED FIELD DATA SHEETS	*												
WaltonRC-LW-1	→ WaltonRC-LW-14	11-15-12					X				X			Date/Time: Contact: By:
														Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 11/21/12 @ 15:25 Via: FEDEX By (Print): [redacted]
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 7991 5736 6925

Surface Sampling Field Data Sheet

Date Collected: 11-15-12
Job Number: 1061-15
Contact Person: Non-Responsive

Job Name: Walton RC
Job Location: 55 South ST
Address: Walton, NY

Company: Bonus Environmental, LLC
Phone Number: 989-779-7686
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
WaltonRC-LW-1	Field Blank	—	—	Ghost wipe
-2	Drill Hall	North wall, on AED case	4"x4"	
-3	Drill Hall	West wall, on AHU motor control box		
-4	Drill Hall	East corner, on weightlifting machine		
-5	Drill Hall	Along east wall, on fire extinguisher		
-6	Drill Hall	Floor, center of Rm		
-7	Locker Rm (Former indoor Firing Range)	East end, on floor (bullet trap Area)		
-8	Locker Rm (Former indoor Firing Range)	Center of Rm, top of locker		
-9	Locker Rm (Former indoor Firing Range)	West end, on Floor		
-10	Kitchen	North corner, top of paper towel dispenser		
-11	classroom	East side, Supplied air grill		
-12	Garage	top of welding cart tool box		
-13	Garage	South end, on Floor		
-14	Commanders OFFICE	NE corner window sill		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix C

Photographs

Building exterior, northwest entrance

Boiler room

Locker room, (former indoor firing range)

Drill Hall

Kitchen

Dining room

Classroom

Garage

Garage, flammables cabinets

Garage, used fluids storage

Garage, peeling beige paint on ceiling

Orderly room

Appendix D

References

1. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OS H) Program, August 19, 1998.

2. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, February 15, 1990.

3. DA PAM 40-503, Medical Service, Industrial Hygiene Program, October 30, 2000.

4. Technical Manual (T.M) 5-810-1, Mechanical Design, Heating, Ventilation, and Air Conditioning, June 1991.

5. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEls), American Conference of Governmental Industrial Hygienists (ACGIH), current edition.

6. UFC 3-410-01 FA Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4 January 2010

7. Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, 29 CFR 1926.62.

8. Army Regulation (AR) 385-10, The Army Safety Program, August 23, 2007/RAR 4 Oct. 2011

9. RP-1-2004, Office Lighting, Illuminating Engineering Society of North America / American National Standards Institute (IESNA/ANSI).

10. RP-7-2001, Industrial Lighting, (IESNA/ANSI).

11. ANSI/The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Standard 62.1-2010, "Ventilation for Acceptable Indoor Air Quality".

12. ANSI/ASHRAE Standard 55-2010 – “Thermal Environmental Conditions for Human Occupancy”

13. Title 24, CFR, Part 35, Subpart B, Sections 35.110, Definitions of Lead-Based Paint, Housing and Urban Development, U.S. Department of Housing.

14. OSHA Permissible Exposure Limit (PEL) for General Industry 29 CFR 1910.1000 Z-1 Table

15. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

Environmental and Occupational Risk Management®

400 West Cummings Park, Suite 5850
Woburn, MA 01801
781.756.3800
(fax) 781.729.4648
www.eorm.com

March 3, 2009

Ms. Non-Responsive
NGB Region North IH Office
301 – IH Old Bay Lane
Havre De Grace, MD 21078
Non-Responsive @us.army.mil

Re: Results of Industrial Hygiene Survey, 62 Poultney Street, Whitehall, NY
EORM® Project No. NATL0009

Dear Ms. Non-Responsive

At your request, on September 5, 2008, Environmental & Occupational Risk Management, Inc. (EORM®) performed an industrial hygiene survey at the National Guard Readiness Center located at 62 Poultney Street, Whitehall, NY 12887. The observations, methodology, results and discussion are provided in the sections that follow. Should you have any questions please do not hesitate to contact me.

Regards,

Non-Responsive

Non-Responsive, MPH
Associate EHS Consultant
EORM, Inc.
Telephone 781.756.3813
E-mail Non-Responsive @eorm.com

Reviewed by:

Non-Responsive

Non-Responsive, CIH
Senior EHS Consultant

Attachments

Industrial Hygiene Survey

National Guard Readiness Center
62 Poultney Street
Whitehall, NY 12887

Project No. NATL0004

5 September 2008

Prepared by:

Environmental and Occupational Risk Management®

400 West Cummings Park, Suite 5850
Woburn, MA 01801

Table of Contents

Executive Summary

Environmental and Occupational Risk Management, Inc. (EORM®) was contracted by the National Guard Bureau Industrial Hygiene Region North Office (NGB IH Office) to perform a baseline industrial hygiene (IH) survey of selected Readiness Centers and administrative buildings located in New York. This report summarizes the results of the Whitehall Readiness Center located at 62 Poultney Street, which occurred on September 5, 2008.

During the IH survey, EORM collected surface wipe samples and personal and area air samples for lead. The results indicate that a relatively small concentration of lead remains on surfaces within the drill hall, NCO room, and throughout the basement. Additionally, a significant amount of surface lead was identified on old fixtures within the former indoor firing range, which is now a locker room. EORM recommends removing the old fixtures from the former indoor firing range and cleaning surfaces throughout the basement and within the drill hall and NCO room. The results of the personal and area air samples indicated that the surface lead was not airborne on the day of EORMs site visit.

The Whitehall Readiness Center appears to be well kept. The first and second floor of the building have no obvious signs of water damage on the walls or ceilings and there is not a lot of dust built up in corners or in hard to clean places. The basement is not as well kept as the first and second floors. There is more dust built up around the space in corners and on surfaces such as shelving. The concrete wall in the basement dining area appears to be breaking apart from moisture. The concrete is beginning to crumble, the paint is peeling, and there is apparent mold growth on the surface of the wall. A sample of the paint from the crumbling wall was collected and sent for lead analysis. The results indicated 35 ppm of lead, which is below the 600 ppm threshold for lead based paint.

Introduction

Environmental and Occupational Risk Management, Inc. (EORM) was contracted by National Guard Bureau Industrial Hygiene Region North Office (NGB IH Office) to perform an industrial hygiene (IH) survey of selected National Guard Armories located in New York. This report summarizes the results of the readiness center located at 62 Poultney Street, Whitehall, New York. The IH survey was performed on September 5, 2008 by Mr. Non-Responsive, Associate EHS Consultant. Ms. Amy Boas, CIH, Senior EHS Consultant, reviewed this report and provided project support. The scope of work completed during this survey included the following:

- Collect wipe samples for lead from surfaces within the drill hall, administration building, and the converted indoor firing range, if present.
- Collect personal or general area full-shift samples for lead on National Guard members during normal activities.
- Inspect the physical condition of the facility and personnel concerns.
- Evaluate the heating, ventilating, and air conditioning system.
- Conduct a lighting survey in all areas of the facility.
- Evaluate the attached garage, if present.
- Collect photographs of the interior and exterior conditions of the readiness center.
- Provide a diagram of the shop layout
- Prepare a detailed report of findings and sampling results, including recommendations for improvement in any areas of concern and conclusion

EORM's survey activities were aided by the generous assistance of Mr Non-Responsive who provided information on the readiness center.

Industrial Hygiene Survey Details

The wipe samples were collected and analyzed in accordance with the Occupational Safety and Health Administration (OSHA) method ID-125G. The samples were analyzed for lead by AMA Analytical Services, Inc. in Lanham, Maryland. AMA is accredited by the American Industrial Hygiene Association.

The analytical laboratory results and chain-of-custody forms corresponding to these samples are provided in Appendix 3. Table 1 includes the results in micrograms of lead per square foot (µg/ft2).

Table 1: Wipe sample results, September 5, 2008

Sample Number	Location	Description	Area (ft2)	Results (µg/ft2)
WTH-01	Drill hall	Desk top	0.108	160
WTH-02	Drill hall	Grate on heater	0.108	460
WTH-03	Drill hall	Floor	0.108	< 110
WTH-04	Drill hall	Mezzanine locker room bench	0.108	< 110
WTH-05	Recreation room	Top of refrigerator	0.108	< 110
WTH-06	NCO room	Window sill	0.108	2,400
WTH-07	Classroom 2 (basement)	Podium	0.108	< 110
WTH-08	Kitchen (basement)	Top of ice box	0.108	< 110
WTH-09	Dining room (basement)	Table	0.108	< 110
WTH-10	Basement locker room (old IFR)	Desk top	0.108	< 110
WTH-11	Basement locker room (old IFR)	Desk top	0.108	< 110
WTH-12	Basement locker room (old IFR)	Old ceiling mounted unit ventilator	0.108	92,000
WTH-13	Basement locker room (old IFR)	Old light fixture	0.108	92,000
WTH-14	Basement locker room (old IFR)	Floor	0.108	630
WTH-15	Basement	Hall outside of locker room	0.108	160
WTH-16	Basement	Electrical panel	0.108	160
WTH-17	Basement	Shelf near boiler room w/exhaust fan	0.108	270
WTH-18	Basement PT room	Ceiling exhaust grate	0.108	920
WTH-19	2nd floor supply office	Mantle	0.108	220

There was no lead detected on the field blank

The results indicate that a relatively small concentration of lead remains on surfaces within the drill hall, NCO room, and throughout the basement. Additionally, the results of the surface samples from the old ceiling mounted unit ventilator and old light fixture, which remain in the locker room from the time it was an indoor firing range indicated a significant concentration (92,000 µg/ft^2) of lead.

Personal and Area Air Sample Results

The personal and area air samples were collected and analyzed in accordance with OSHA Method ID-125G. The samples were analyzed for lead by AMA Analytical Services, Inc. in Lanham, Maryland. AMA is accredited by the American Industrial Hygiene Association.

The air samples were collected using a SKC AirChek® sampling pump. Pre- and post-calibration of air flow rates were measured and recorded for the sample using the BIOS DryCal Model DC-I. The personal breathing zone sample was collected by sampling air from the hemisphere forward of the employees shoulders with a radius of approximately 6 to 9 inches from the inhalation area. Mr. Rich Gorman performed day-to-day administrative operations throughout the monitoring period. The area sample was collected from the podium in classroom 2 located in the basement. The field notes and analytical laboratory results and chain-of-custody forms corresponding to these samples are provided in Appendix 3. Table 2 includes the results and a comparison to the respective PEL.

Table 2: Personal Breathing Zone Sample Results, September 5, 2008

Sample Number	Employee	Concentration	OSHA Action Level	OSHA PEL	Exceed PEL or TLV? (Yes / No)
WTH-A1	Mr. Non-Responsive	< 3.0 µg/m3	30 µg/m3	50 µg/m3	No
WTH-A2	Area sample – basement classroom	< 3.0 µg/m3	30 µg/m3	50 µg/m3	No

There was no lead detected on the field blank

The results of the air samples indicated that no detectable airborne concentrations of lead was present on the day of EORM's site visit

Facility Inspection and Employee Concerns

The Whitehall Readiness Center appears to be well kept. The first and second floor of the building have no obvious signs of water damage on the walls or ceilings and there is not a lot of dust built up in corners or in hard to clean places.

The basement is not as well kept as the first and second floors. There is more dust built up around the space in corners and on surfaces such as shelving. The concrete wall in the basement dining area appears to be breaking apart from moisture. The concrete is beginning to crumble, the paint is peeling, and there is apparent mold growth on the surface of the wall. A sample of the paint on the wall was collected and analyzed for lead content. The result indicated there is 35 mg/kg (35 ppm) lead in the paint, which is below the 600 ppm level of which is considered lead based paint by the U.S. Consumer Products Safety Commission 16 CFR 1303 Consumer Products Bearing Lead-Containing Paint.

There is one full-time National Guard employee at the Whitehall Readiness Center. He did not report any indoor air quality issues, such as odors, allergy symptoms, or heating/cooling problems.

There were no reports of ergonomic issues at the Whitehall Readiness Center.

Ventilation System Evaluation

There are no rooms, such as a battery room, film room, or attached garage that would require ventilation. FMS – 15 is co-located on the property however, inspection of field maintenance shops was outside of this scope of work.

The general heating, ventilating, and air-conditioning (HVAC) for the Whitehall Readiness Center is accomplished through a combination of a boiler system for heating and window mounted air-conditioners.

Direct-reading measurements for temperature, relative humidity, and carbon dioxide (CO2) were performed using a Q-Trak Plus Indoor Air Quality Monitor (Model #s 8551). This instrument detects CO_2 using a selective infrared absorption method and displays airborne concentrations in units of ppm. This instrument also measures temperature and relative humidity using electrical sensing methods. It displays temperature in degrees Fahrenheit and relative humidity in percent. The manufacturer's recommended yearly calibration was last performed in January 2008.

Table 3: Indoor air quality measurements, September 5, 2008.

Location	Number of Occupants	Temp (^{0}F)	RH (% RH)	CO_2 (ppm)
Outdoors	---	78	69	411
Basement dining hall	1	76	70	468
NCO room	2	75	71	469
2nd floor supply office	1	76	69	397

The primary cursors for indoor thermal comfort are temperature and relative humidity. Air temperature is recommended to range from 73 to 79°F during summer and from 68 to 75°F during winter (ASHRAE 55-1992) for indoor office environments. This assumes that building occupants are dressed in normal garments and perform mainly sedentary activities. The results indicated that the indoor temperature ranged from 75 to 76°F, which was within the recommended ranges.

The relative humidity (RH) inside buildings should be maintained between 30 and 60% (ASHRAE-62-2001). When the RH in indoor environments exceeds 60%, microbial growth may occur; whereas, relative humidity below 30% may cause the drying of mucous membranes and discomfort. The results indicated that the indoor relative humidity ranged from 69% to 71% indoors, which exceeded the recommended guideline

The ASHRAE Standard 62-2001, *Ventilation for Acceptable Indoor Air Quality,* has established a reference level based upon human comfort criteria of a maximum CO_2 concentration of 700 ppm above existing outdoor concentrations, below which is suggestive of an adequate quantity of outdoor air supply ventilation to the occupied space. The results indicated the indoor concentration of CO_2 ranged from 397 ppm to 469 pmm and the concurrent outdoor concentration was 411 ppm. This indicates there was sufficient outdoor air supply to the occupied space.

Lighting Survey

The lighting at the Whitehall Readiness Center consists of fluorescent lights and incandescent lights. Fluorescent lighting is used in most areas of the building, including the drill hall and offices. The incandescent lighting is used in the locker room, fallout shelter, and officers lounge. A lighting

survey was conducted using a Cooke Corporation Cal-Light 400L, serial number 1C040084L. The Cal-Light was calibrated by the manufacturer.

The lighting measurements were compared to the Recommended Practice for Lighting Industrial Facilities RP-7-01 and for Office Building RP-1-04. Both RP-7 and RP-1 are approved by the American National Standards Institute (ANSI) and the Illuminating Engineering Society of North America (IESNA). Table 4 below, summarizes the results of the lighting survey.

Table 4: Lighting Survey Results, September 4, 2008

Location	Measurement (fc)	RP-7 Recommended Illuminance Values[1] (fc)	Meets RP-7 Values? (Yes/No)	Comments
NCO room	50-77	30	Yes	
Main entrance	7-15	7	Yes	
Break room	26	10	Yes	
Recreation room	32-70	30	Yes	
Drill hall	25-45	30	Yes	
Mezzanine locker room	7-31	7	Yes	
Superintendent's office	No access			Door locked
Recruiter's office	No access			Door locked
Storage/supply room	48-97	30	Yes	
2nd floor supply office	41-51	50	No	Light bank out
2nd floor 1st SGT office	38-44	50	No	
2nd floor Commander's office	50-85	50	Yes	
2nd floor ladies room	16-50	7	Yes	
2nd floor lounge/dining	12-22	10	Yes	
Basement electrical room	10-42	30	Yes	Low in nonworking areas
Basement fallout shelter	7	7	Yes	
Basement pantry	14	10	Yes	
Basement hallway	4-44	7	Yes	
Basement State Guard room	No access			Door locked
Basement locker room (old IFR)	2-82	7	No	Many lights out
Basement classroom 1	14-58	50	No	Predominantly below 50
Basement classroom 2	14-62	50	No	Predominantly below 50
Basement PT room	14-42	10	Yes	
Basement dining room	15-105	10	Yes	Light bank out
Basement kitchen	48-110	30-50	Yes	
Maintenance section/storage	14-64	10-30	Yes	
Boiler room	5-61	30	Yes	
Furnace	4-40	30	Yes	
Battery room/storage – inactive	7-12	5	Yes	

fc = footcandles

[1] The recommended illuminance values were obtained from the ANSI/IESNA RP-1-04 (Office Lighting) and RP-7-01 (Industrial Lighting)

According to RP-1-04 and RP-7-01, the lighting survey results indicate insufficient lighting in the 2nd floor supply office and 1st SGT office, basement locker room, and basement classrooms. There were several light banks out in the 2nd floor supply office, basement locker room, and basement dining room. The lighting in the remaining areas of the building was sufficient.

Evaluation of Attached Garage

The Whitehall Readiness Center does not have an attached garage.

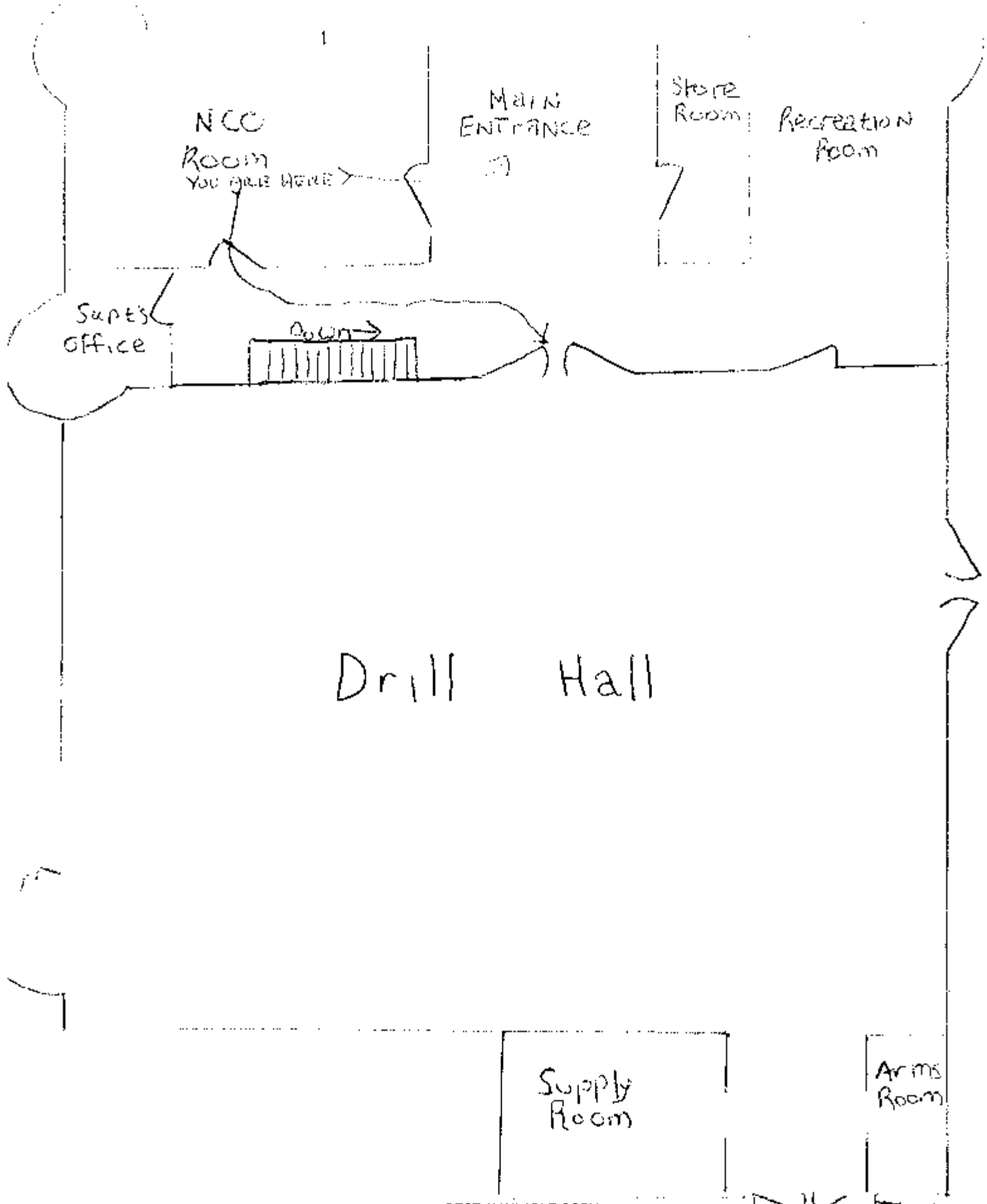
Conclusions and Recommendations

Based on the observations and results of the industrial hygiene survey, EORM has concluded the following:

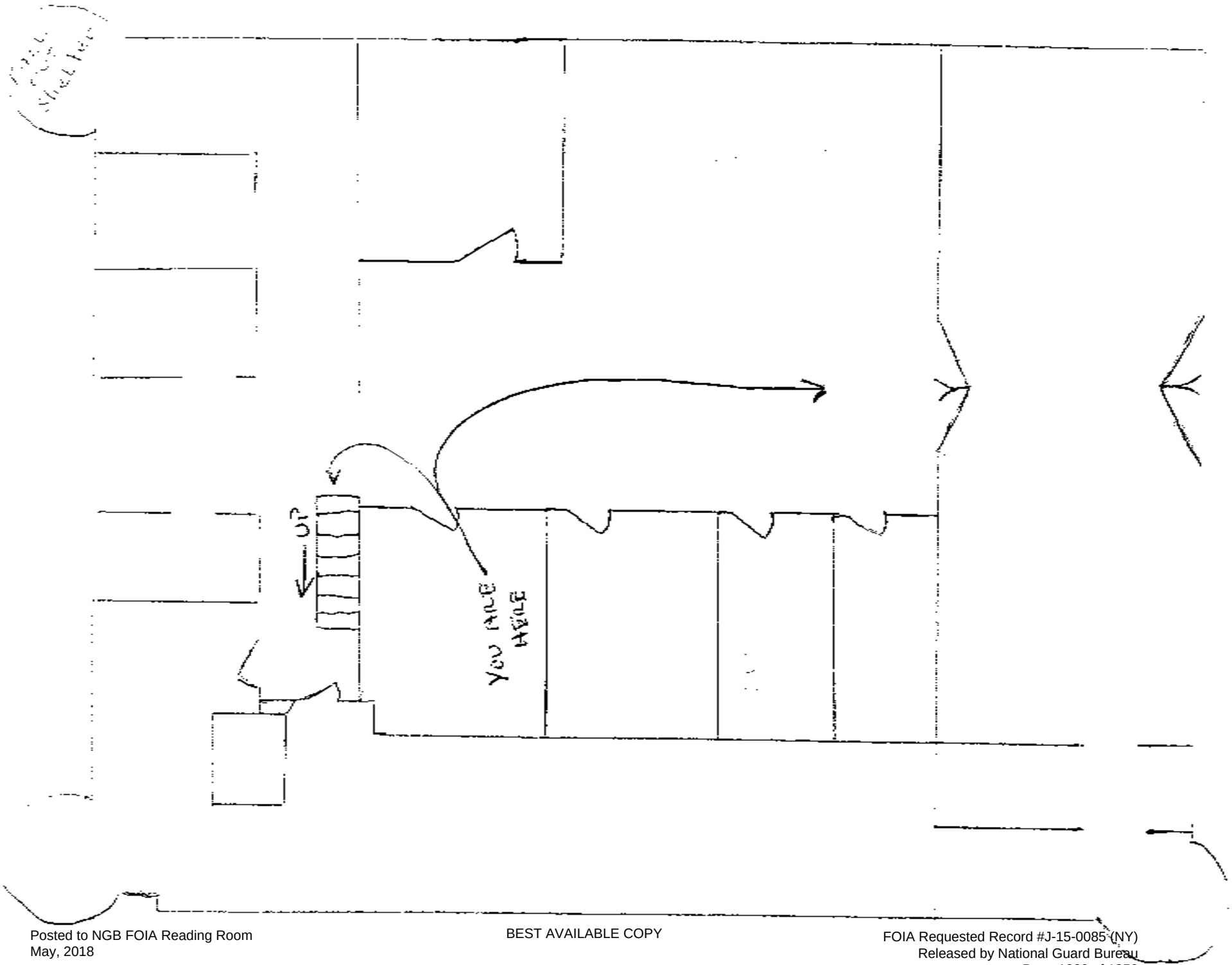
- The surface wipe samples for lead indicate there is surface lead within the drill hall, NCO room, and throughout the basement. Additionally, a significant amount of lead was detected on the surfaces of the old ceiling mounted unit ventilator and old light fixture in the old indoor firing range, which is now a locker room. EORM recommends that the unit ventilator and all old light fixtures within the locker room be removed and all surfaces within the drill hall, NCO room and throughout the basement be cleaned by a contractor specializing in lead decontamination.
- The personal and area air samples indicated that the surface lead was not airborne on the day of EORM's site visit. However, there was only a one employee onsite during EORM's site visit. Additional activities that occur during drills may disturb the surface lead. Therefore all lead contaminated surfaces should be cleaned.
- The results of the lighting survey indicate several rooms with insufficient lighting, including the 2nd floor supply office and 1st SGT office, basement locker room, and basement classrooms. The low lighting in the 2nd floor supply office and basement locker room are attributable to light banks being burned out. EORM recommends that the lighting be fixed in these areas. Additional lighting should also be provided to the 1st SGT office and the basement classrooms.

The results of this survey should be communicated to the participants as well as other people who perform similar job duties that did not participate.

Appendix 1 – Whitehall Readiness Center Floor Plan



FIRE EVACUATION PLAN



Appendix 2 – Photographs

Photograph 1: Exterior of the building

Photograph 2: Drill hall

Photograph 3: Old IFR – Locker room

Photograph 4: PT room

Photograph 5: Storage area by battery room (exhaust fan servicing PT and classrooms visible)

Photograph 6: Boiler

Photograph 7: Deteriorating wall in dining hall (visible mold growth)

Appendix 3 – Laboratory Analytical Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

100470

NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	Natioanl Guard Armory-White Hall	**Chain Of Custody:**	503196
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	White Hall NY	**Date Submitted:**	10/3/2008
	Havre de Grace, Maryland 21078	**Job Number:**	NATL0004	**Person Submitting:**	Non-Responsive
		P.O. Number:	Not Provided	**Date Analyzed:**	10/13/2008 **Report Date:** 10/13/2008

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0900999	WTH-01	Flame	Wipe	****	0.108	110	ug/ft²	160	ug/ft²	
0901000	WTH-02	Flame	Wipe	****	0.108	110	ug/ft²	460	ug/ft²	
0901001	WTH-03	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0901002	WTH-04	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0901003	WTH-05	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0901004	WTH-06	Flame	Wipe	****	0.108	110	ug/ft²	2400	ug/ft²	
0901005	WTH-07	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0901006	WTH-08	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0901007	WTH-09	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0901008	WTH-10	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0901009	WTH-11	Flame	Wipe	****	0.108	110	ug/ft²	< 110	ug/ft²	
0901010	WTH-12	Flame	Wipe	****	0.108	110	ug/ft²	92000	ug/ft²	
0901011	WTH-13	Flame	Wipe	****	0.108	110	ug/ft²	92000	ug/ft²	
0901012	WTH-14	Flame	Wipe	****	0.108	110	ug/ft²	630	ug/ft²	
0901013	WTH-15	Flame	Wipe	****	0.108	110	ug/ft²	160	ug/ft²	
0901014	WTH-16	Flame	Wipe	****	0.108	110	ug/ft²	160	ug/ft²	
0901015	WTH-17	Flame	Wipe	****	0.108	110	ug/ft²	270	ug/ft²	
0901016	WTH-18	Flame	Wipe	****	0.108	110	ug/ft²	920	ug/ft²	
0901017	WTH-19	Flame	Wipe	****	0.108	110	ug/ft²	220	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	**Job Name:**	Natioanl Guard Armory-White Hall	**Chain Of Custody:**	503196		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	White Hall NY	**Date Submitted:**	10/3/2008		
	Havre de Grace, Maryland 21078	**Job Number:**	NATL0004	**Person Submitting:**	Non-Responsive		
		P.O. Number:	Not Provided	**Date Analyzed:**	10/13/2008	**Report Date:**	10/13/2008

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result			Comments
0901018	WTH-FB	Flame	Wipe Blank	****	N/A	12	ug	<	12	ug	
0901019	WTH-A1	Flame	Air	0	N/A	3	ug/m³	<	3	ug	
0901020	WTH-A2	Flame	Air	0	N/A	3	ug/m³	<	3	ug	
0901021	WTH-FB	Flame	Air Blank	0	N/A	3	ug/m³	<	3	ug	
0901022	WTH-B1	Flame	Soil/Solid	****	N/A	35	mg/Kg		35	mg/Kg	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.

NY ELAP accrediation applies only to paint chip, wipe, and water samples.

Analyst: Non-Responsive

Technical Manager: Non-Responsive

OWT (410) 247-2024 127511 210 REV. 6.08

(P. 1)

AMA Analytical Services, Inc.
Focused on Results
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

503196

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: NGB IHNE
3. Address 2: 301-1H Old Bay Lane
4. Address 3: Havre de Grace, MD 21078
5. Phone #: 410.942.0273 Fax #:

Submittal Information:

1. Job Name: National Guard Armory - Whitehall
2. Job Location: Whitehall NY
3. Job #: NATLOW 4 P.O. #:
4. Contact Person: Non-Responsive @ phone # 857.926.3341
5. Submitted by: Signature: Non-Responsive

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due:
❑ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ☒ 5 Day +
❑ 2 Day Date Due:
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
❑ Include COC/Total Report
☒ Email: Non-Responsive eerm.com
❑ Fax:
❑ Verbals:

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)

PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)

TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Lead Analysis
❑ Paint Chip (QTY)
☒ Dust Wipe (wipe type Ghost) 20 (QTY)
☒ Air 3 (QTY)
☒ Soil/Solid 1 (QTY)
❑ TCLP (QTY)
❑ Drinking Water (QTY)
❑ Waste Water (QTY)
❑ Dust Wipe Furnace (wipe type) (QTY)

Mold - Direct Microscopic Analysis
❑ Collection Apparatus for Spore Traps:
❑ Spore-Trap (QTY) ❑ Bulk (QTY)
❑ Surface Swab (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Tape (QTY) ❑ Other (Specify) (QTY)

CLIENT ID NUMBER	SAMPLE INFORMATION: SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WATER AND OTHER	SPORE TRAP	TAPE	SWAB
	WTH-01	9/5		100cm²				X				X				
	WTH-02															
	WTH-03															
	WTH-04															
	WTH-05															
	WTH-06															
	WTH-07															
	WTH-08															
	WTH-09															
	WTH-10															
	WTH-11															
	WTH 12															

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY:
(CUSTODY)
1. Date/Time RCVD: 9 / 10 / 08 @ 1000 Via: Fed EX By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To:
4. Comments:

Date: / / Time: Initials:

OWI 450; 247/2024 ... 210 REV 6-08

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) P2 503196

Mailing/Billing Information:

1. Client Name: See p. 1
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: ______ Fax #: ______

Submittal Information:

1. Job Name: See p. 1
2. Job Location:
3. Job #: ______ P.O. #: ______
4. Contact Person: ______ @ phone # ______
5. Submitted by: ______ Signature: ______

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
- ☐ Immediate Date Due: ______
- ☐ 24 Hours Time Due: ______
- Comments: ______

NORMAL BUSINESS HOURS
- ☐ Immediate ☐ 3 Day
- ☐ Next Day ☐ 5 Day +
- ☐ 2 Day Date Due: ______
- ☐ Results Required By None (Every Attempt Will Be Made to Accommodate)

REPORT TO:
- ☐ Include COC/Field Data Sheets with Report
- ☐ Email: ______ @ ______
- ☐ Fax: ______
- ☐ Verbals: ______

Asbestos Analysis

PCM Air – Please Indicate Filter Type
PC MCE Porosity ______ in a 25mm 37mm
- ☐ NIOSH 7400 ______ (QTY)
- ☐ Fiberglass ______ (QTY)

TEM Air – Please Indicate Filter Type
PC MCE Porosity ______ in a 25mm 37mm
- ☐ AHERA ______ (QTY)
- ☐ NIOSH 7402 ______ (QTY)
- ☐ Other (specify) ______ (QTY)

PLM Bulk
- ☐ EPA 600 – Visual Estimate ______ (QTY)
- ☐ EPA Point Count ______ (QTY)
- ☐ NY State Friable 198.1 ______ (QTY)
- ☐ Grav. Reduction ELAP 198.6 ______ (QTY)
- ☐ Other (specify ______ (QTY)

TEM Bulk
- ☐ ELAP 198.4/Chatfield ______ (QTY)
- ☐ NY State PLM/TEM ______ (QTY)
- ☐ Residual Ash ______ (QTY)

TEM Dust
- ☐ Qual (pres/abs) Vacuum/Dust ______ (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 ______ (QTY)
- ☐ Quan. (s/area) Dust D6480-99 ______ (QTY)

TEM Water
- ☐ Qual (pres/abs) ______ (QTY)
- ☐ ELAP 198.2/EPA 100.2 ______ (QTY)
- ☐ EPA 100.1 ______ (QTY)

☐ All samples received in good condition unless otherwise noted. (TEM Water samples ______ °C)

Lead Analysis
- ☐ Paint Chip ______ (QTY)
- ☐ Dust Wipe (wipe type ______) ______ (QTY)
- ☐ Air ______ (QTY)
- ☐ Soil/Solid ______ (QTY)
- ☐ TCLP ______ (QTY)
- ☐ Drinking Water ______ (QTY)
- ☐ Waste Water ______ (QTY)
- ☐ Dust Wipe Furnace (wipe type ______) ______ (QTY)

Mold - Direct Microscopic Analysis
- ☐ Collection Apparatus for Spore Traps: ______
- ☐ Spore-Trap ______ (QTY) ☐ Bulk ______ (QTY)
- ☐ Surface Swab ______ (QTY) ☐ Surface Vacuum Dust ______ (QTY)
- ☐ Surface Tape ______ (QTY) ☐ Other (Specify) ______ (QTY)

SAMPLE INFORMATION / **ANALYSIS** / **MATRIX**

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	PAINT CHIP	WIPE	TAPE	SWAB
	WTH-13	9/5		100cm				X				X				
	WTH-14	↓		↓				↓				↓				
	WTH-15	↓		↓				↓				↓				
	WTH-16	↓		↓				↓				↓				
	WTH-17	↓		↓				↓				↓				
	WTH-18	↓		↓				↓				↓				
	WTH-19	↓		↓				↓				↓				
	WTH-FB	↓		—				↓				↓				
	WTH-A1	↓						↓		↓						
	WTH-A2	↓						↓		↓						
	WTH-AFB	↓						↓		↓						
	WTH-B1	↓						↓			X					

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time: ______ Contact: ______ By: ______

Date/Time: ______ Contact: ______ By: ______

Date/Time: ______ Contact: ______ By: ______

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: ____/____/____ @ ____ Via: ______ By (Print) ______ Sign ______
2. Date/Time Analyzed: ____/____/____ @ ____ By (Print) ______ Sign ______
3. Results Reported To: ______ Via ______ Date: ____/____/____ Initials: ______

Appendix 4 – References

American Conference of Governmental Industrial Hygienists (ACGIH). 2007. *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*.

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62.1-2007, Ventilation for Acceptable Indoor Air Quality.

Code of Federal Regulations (CFR) 29 Part 1910.1000 Air Contaminants.

DODI 6055.1, DOD SO4 Program, 19 August 1998.

RP-1-2004, Office Lighting, ANSI/IESNA

RP-7-2001, Industrial Lighting, ANSI/IESNA, change 20 July 2004.

UFC 3-410-01FA, Unified Facilities Criteria (UFC) for Heating, Ventilating, and Air Conditioning, Department of Defense, 15 May 2003.