2 of 3

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) S15353

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

Submittal Information:
1. [redacted] 3K NJ
2. [redacted] Jersey City
3. Job #: [redacted] PO #: W912K6-09-A-0003
4. Contact Pers[redacted] @ phone # (410) 942-0273
5. [redacted] [redacted]

Non-Responsive

Non-Responsive

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:

[redacted]
☐ 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/Field Data Sheets with Report
☑ [redacted] Non-Responsive [redacted]
☐ Fax [redacted] us.army.mil
☐ Ver[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)

Wipe Analysis
☐ Pb Paint Chip 2 (QTY)
☑ Pb Dust Wipe (wipe type Ghost) 21 (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)

Microbiology
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)

LOT 3/12 3/12
EXP 9/15

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WIPES AND OTHERS	SPORE TRAP	TAPE	SWAB
13	Lobby Coke Machine	3/11/13		100 cm²				X								
14	1ST Floor Hall Flow															
15	Recruiting Shelf															
16	FAC Window Sill															
17	CO C CMDR OFF CABINET															
18	C2 Bookshelf															
19	C9 window sill															
20	2ND FLR HALL FLOOR - copier															
21	C18 Counter															
22	3RD FLOOR Window Sill															
23	Kitchen Frig															
24	Dining HEATER															

CLIENT CONTACT

(LABORATORY STAFF ONLY)

Date/Time:	Contact:	By:
Date/Time:	Contact:	By:
Date/Time:	Contact:	By:

LABORATORY STAFF ONLY:
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.
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) 515353 3 of 3

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. [redacted]: 3KNJ
2. [redacted]: Jersey City
3. Job #: PO #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone # (410) 942-0273
5. [redacted]: 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:

[redacted]
☐ Immediate ☐ 3 Day
☑ Next Day ☐ 5 Day +
☐ 2 Day Date Due:
☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☑ Incl[redacted]lth Report
☑ [redacted]: Non-Responsive [redacted] compliance plus.com
☐ Fax: [redacted] ...us.army.mil
☐ Verb[redacted] ...us.army.mil

[redacted] 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 2 (QTY)
☐ Pb Dust Wipe (wipe type GHOST) 21 (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)

Biological 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 NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
25 C15	WALL	3/11/13						X			X					
26 FAC	WALL	"						X			X					
27 Boiler	Room Breech						X				X					

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

LABORATORY STAFF ONLY:
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:

Appendix B. Photographs

Jersey City, NJ Armory

C15 Deteriorated Paint on Ceiling

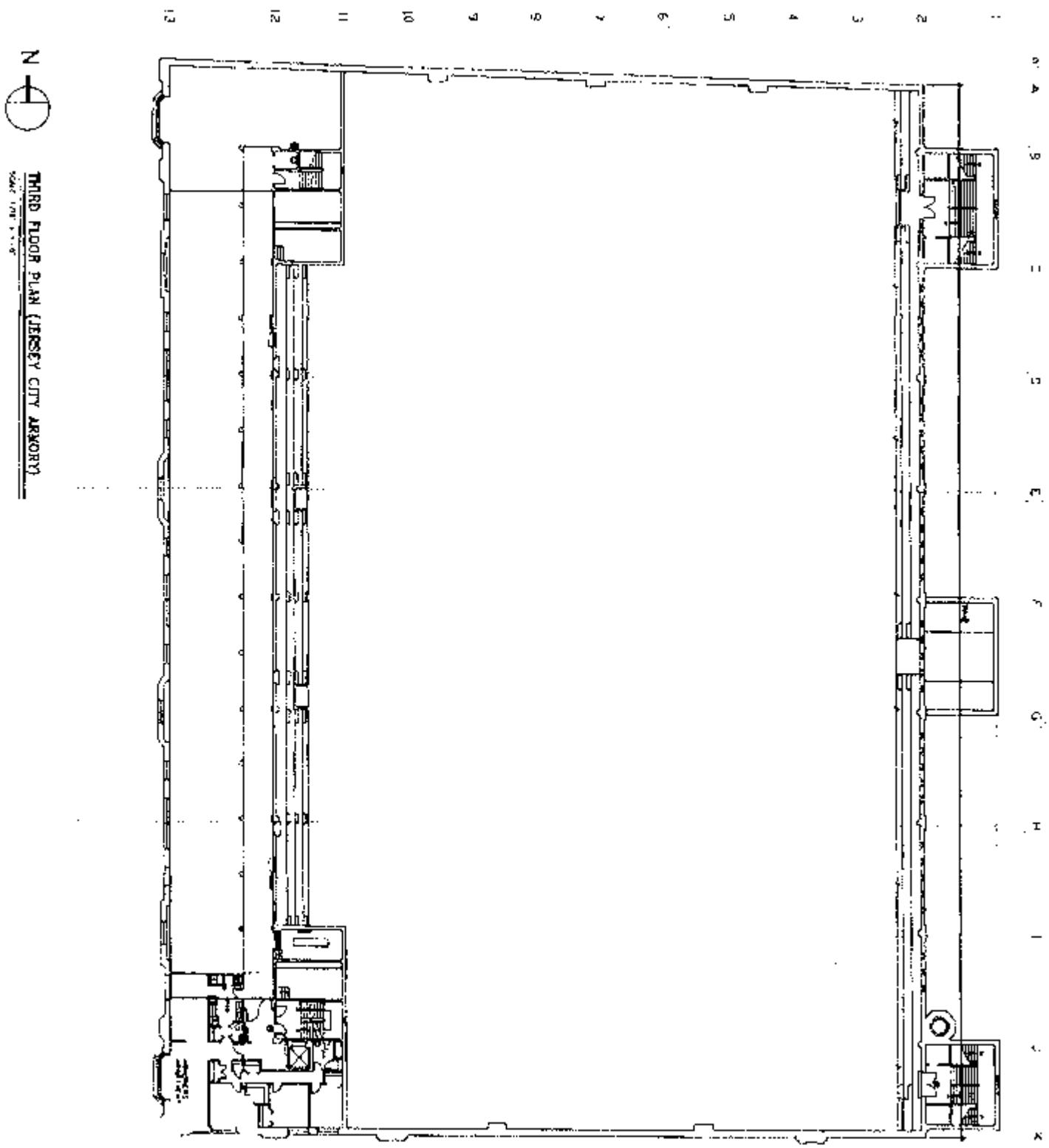
C19 Water stained Ceiling Tiles

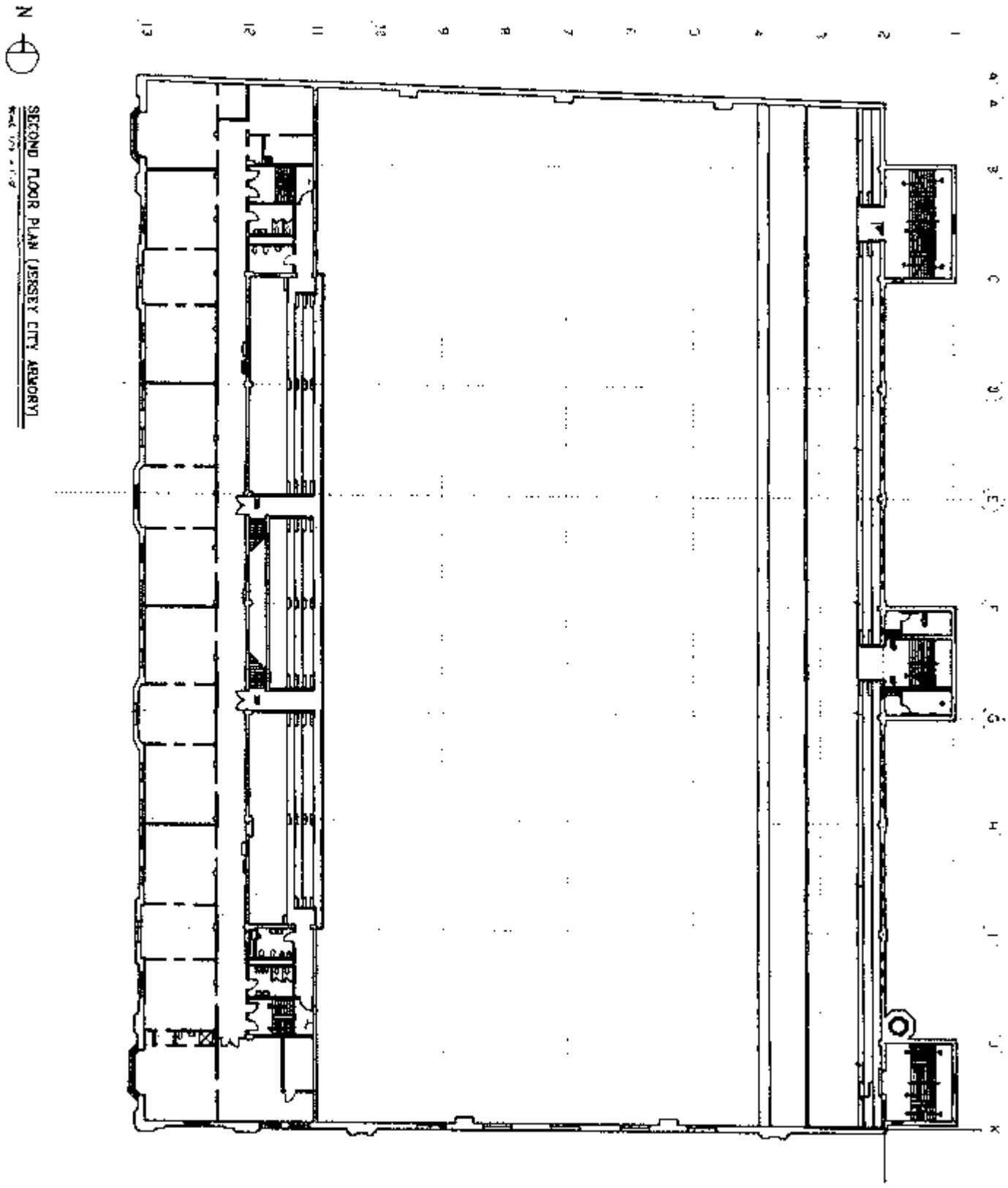
Boiler Room Breeching

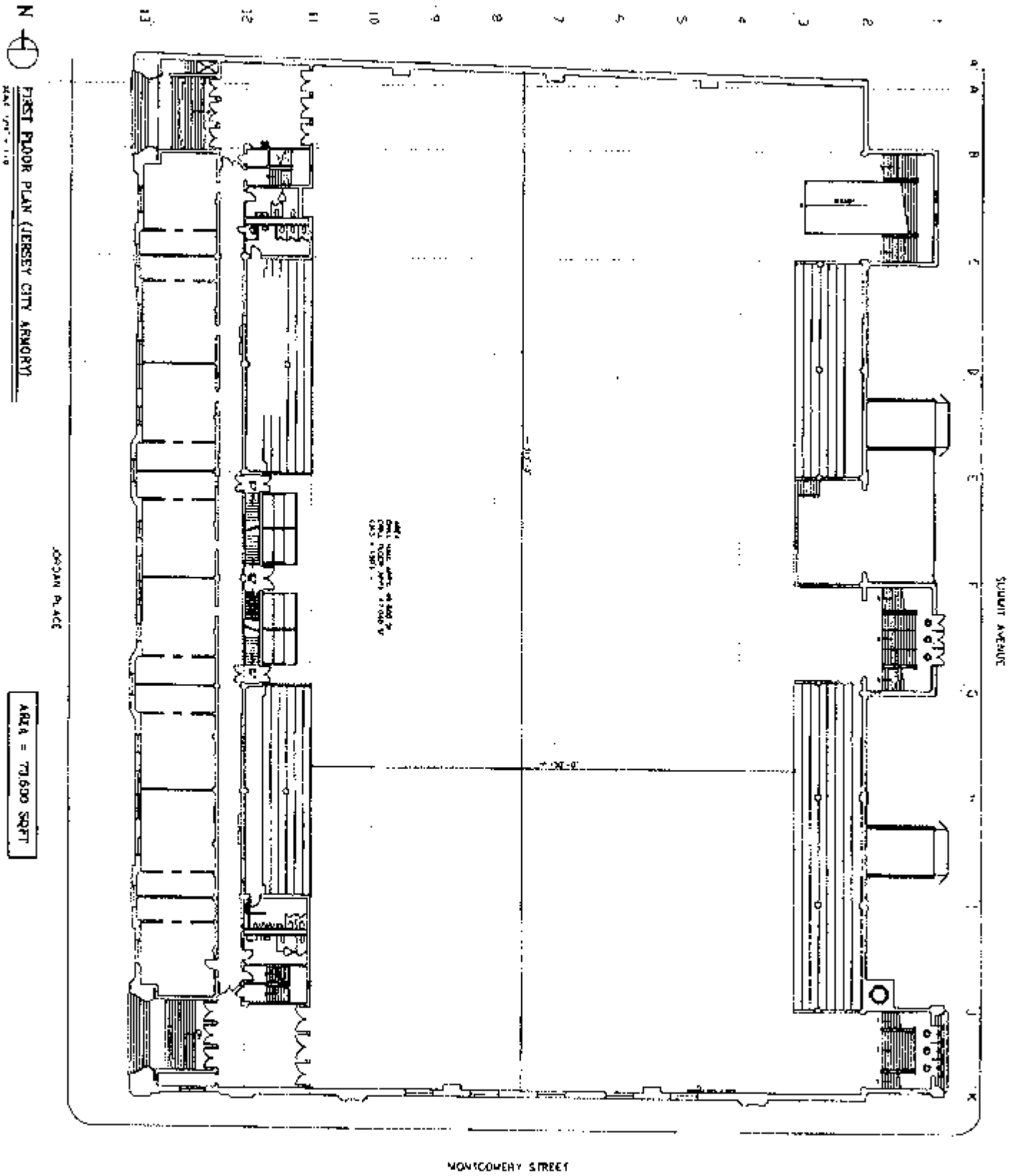
Boiler Room Boiler Breech Suspected ACM

Jersey City Drill Hall/Arena

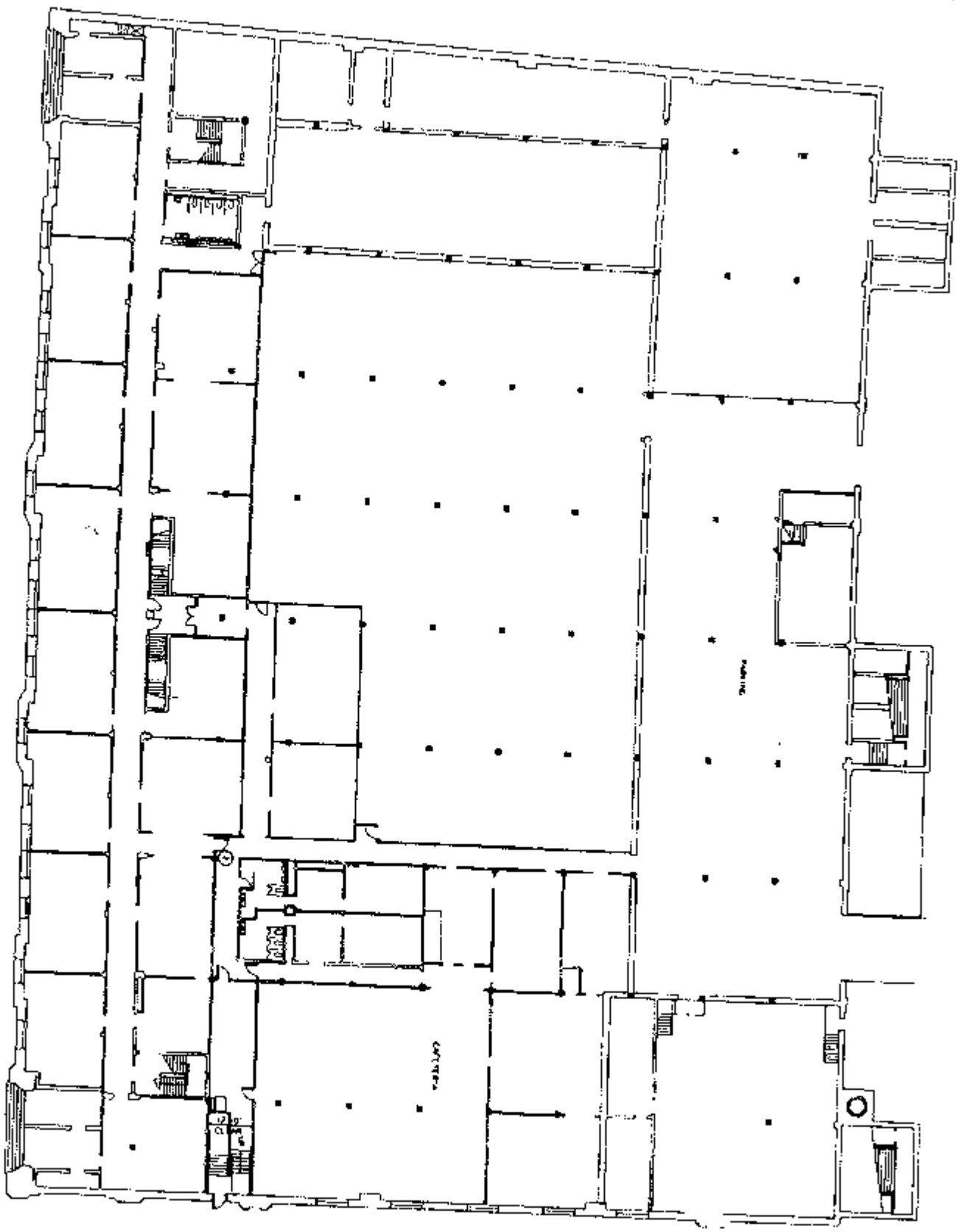
Appendix C. Floor Plan







JERSEY CITY BASEMENT FLOOR PLAN



Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition

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

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

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h)(3)]

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM)

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 NOV 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

FINAL
INDUSTRIAL HYGIENE SURVEY REPORT
LAWRENCEVILLE ARMORY
LAWRENCEVILLE, NEW JERSEY

April 2006
PN: 39741509

Non-Responsive

Office Manager

Non-Responsive

Project Manager

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TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Computer workstations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3
Lighting		
On the day of the survey, the illumination in the administrative offices was inadequate in most circumstances.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected from the facility in amounts greater than 200 $\mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 4
Asbestos		
A site-specific asbestos operations and maintenance plan was not available.	Maintain a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3
Mold		
Water damage was observed on ceiling tiles in the administrative area. Mold growth could become an issue if left unattended.	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4

1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Lawrenceville Armory located at 101 Eggert Crossing Road in Lawrenceville, New Jersey 08648. This report includes an executive summary and a description of the site activities and findings and a list of conclusions and recommendations.

On March 31, 2004, Ms Non-Responsive an industrial hygienist with URS, conducted a site visit at the Armory in Lawrenceville, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. SGM Non-Responsive of the New Jersey ARNG was the site contact for this survey.

The armory is a two-story brick building, with an attached drill hall that is constructed primarily of brick and mortar. The facility is built on a concrete slab with a pitched asphalt roof. An armory layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This area contains multiple offices located throughout the building with desks and computer workstations, a conference room, classrooms, a gymnasium, bathrooms and a club room. Computer workstations were assessed during the walkthrough for ergonomic issues. Several computer workstation chairs could not be adjusted for height to accommodate the user's comfort. If more than one person is using that station, then proper adjustments need to be made to accommodate each person. No complaints were received by URS concerning workstations at the time of this survey.

Water damage was observed in several places throughout the building. These areas include the dining room, the office adjacent to dining room, and the conference room. Mold growth could become an issue if left unattended.

Cleaning products were located in the flammable material storage lockers with hazardous communications data.

2.2 Chemical and Physical Agents Sampled

On the day of the survey, relative humidity, carbon dioxide and carbon monoxide measurements were collected throughout the building and outside. These readings were all measured using a TSI Q-Trak ™ (Model 8551). No indoor air quality complaints were received during this survey.

2.2.1 Relative Humidity

Relative humidity on the day of the survey ranged from 35.3%-36.0% throughout the various building areas with an average of 35.7%. The average reading was below the recommended maximum of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from a low of 621 to a spike of 780 parts per million (ppm), with an average of 701 ppm. The outside reading was 556 ppm.

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above the outside level. Given an outside level of 556 ppm on the day of the survey, the ASHRAE limit would be 1,256 ppm.

2.2.3 Carbon Monoxide

Carbon monoxide concentrations remained at 0 ppm on the day of the survey. ASHRAE (62.1-2004) recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

2.2.4 Lighting

Lighting in the administrative areas was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI/IESNA RP –1-04 American National Standard Practice for Office Lighting).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Lighting Footcandles	Recommended Lighting Footcandles
Admin S1 Office	Administrative Duties	43	50
Front Office	Administrative Duties	54	50
Back Office	Administrative Duties	15	50
Room 131 Office	Administrative Duties	35	50
Brigade Office	Administrative Duties	44	50
Office 127	Administrative Duties	45	50
Office 132	Administrative Duties	26	50
Office 133	Administrative Duties	26	50
Office 207A	Administrative Duties	24	50
Office 149	Administrative Duties	22	50
Office 183	Administrative Duties	42	50
Library Office	Administrative Duties	27	50
Office 211	Administrative Duties	51	50
Office 218	Administrative Duties	17	50

On the day of the survey the illumination in the administrative area was inadequate in most offices.

2.2.5 Lead

Wipe testing for lead was conducted throughout the facility using Ghost Wipes™, which meet ASTM E 1792 standards. Two surfaces within the administrative areas were found to contain lead dust levels, which exceeded the maximum limit. The analytical report from AMA Analytical Services, Inc. (AM) is contained in Appendix D. Table 2-2 below shows the results of the lead sampling.

Table 2-2
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
Red Room Club	WS-4	16 in^2	8.9	200
Garage	WS-5	16 in^2	5,000	200
Dining Room	WS-7	16 in^2	20	200
Red Room Club	WS-8	16 in^2	37	200
Classroom	WS-9	16 in^2	8.4	200
Gym	WS-10	16 in^2	140	200
Recruiter	WS-11	16 in^2	63	200
Museum	WS-16	16 in^2	120	200
Museum Office#2	WS-17	16 in^2	49	200
Room 2001	WS-19	16 in^2	16	200
Room 2023	WS-20	16 in^2	77	200
Room 2006	WS-21	16 in^2	120	200
Room 2016	WS-22	16 in^2	33	200
Room 2008	RWS-23	16 in^2	140	200
Room 2012	RWS-24	16 in^2	22	200
Room 2026	RWS-25	16 in^2	13	200
Room 1017	RWS-27	16 in^2	230	200
Office Next to Supply	RWS-29	16 in^2	150	200

Sample numbers and locations can be found on the site map in appendix A.

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

GENERAL: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible. Water damage was observed in several parts of the building.

ERGONOMICS: The ergonomic issues were minor with the desks, chairs and monitors and need to be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey the illumination in the administrative area was inadequate in most offices and generally throughout the facility. URS recommends increasing the area lighting or supplement task lighting for each workstation in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

LEAD: Two surfaces within the administrative areas were found to contain lead dust levels above 200 micrograms/ square foot. This is the level recommended by the NGB Region North Industrial Hygiene Office. The U.S. Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1910.1025 and 29 CFR 1926.62 are designed to protect workers potentially exposed to elevated airborne levels of lead from lead-based paint. The NGB Region North IH Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

3.0 FORMER INDOOR FIRING RANGE

3.1 Operation Description

The former indoor firing range is currently used for storage.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former indoor firing range using Ghost Wipes™, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1
Levels of Lead Dust Found in the Former Firing Range

Sample Location	URS Sample Number	Area Wiped	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
File Cabinet	FR-1	16 in^2	310	200
Floor	FR-2	16 in^2	2400	200
Floor	FR-3	16 in^2	25000	200
Light Switch	FR-4	16 in^2	1900	200
Table Top	FR-5	16 in^2	2500	200

Sample numbers and locations can be found on the site map in appendix A.

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: Lead sampling was performed in this area. Results indicated elevated levels of lead in dust throughout the former firing range. The NGB Region North IH Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Appendix H contains guidelines for the clean-up and rehabilitation of indoor firing ranges.

4.0 DRILL HALL

4.1 Operation Description

The drill hall is a 7,000 square foot area with about a 30-foot high ceiling used for assembling personnel. The walls are constructed of cinder blocks with a concrete floor, and an overhead door.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using Ghost Wipes™, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1
Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
Drill Floor (Floor)	WS-12	16 in^2	16	200
Drill Floor (Window Sill)	WS-13	16 in2	67	200
Drill Floor (Radiator Cover)	WS-14	16 in2	21	200
Drill Floor (Window Sill)	WS-15	16 in2	190	200

Sample numbers and locations can be found on the site map in Appendix A.

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: Wipe samples collected from the drill hall for lead were found to be below allowable limits. The NGB Region North IH Office has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

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5.0 BOILER ROOM

5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

5.2 Chemical and Physical Agents Sampled

No chemical or physical agents were sampled in this area.

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

ASBESTOS: Observed suspect asbestos-containing materials were found to be in good condition. If an asbestos-containing material should become damaged, it is recommended that the damaged material be replaced with new, non-asbestos material by an appropriately trained professional.

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

6.4 Hazard Communication

A program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/IESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 55-2004: Thermal Environmental Conditions for Human Occupancy

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

APPENDIX A

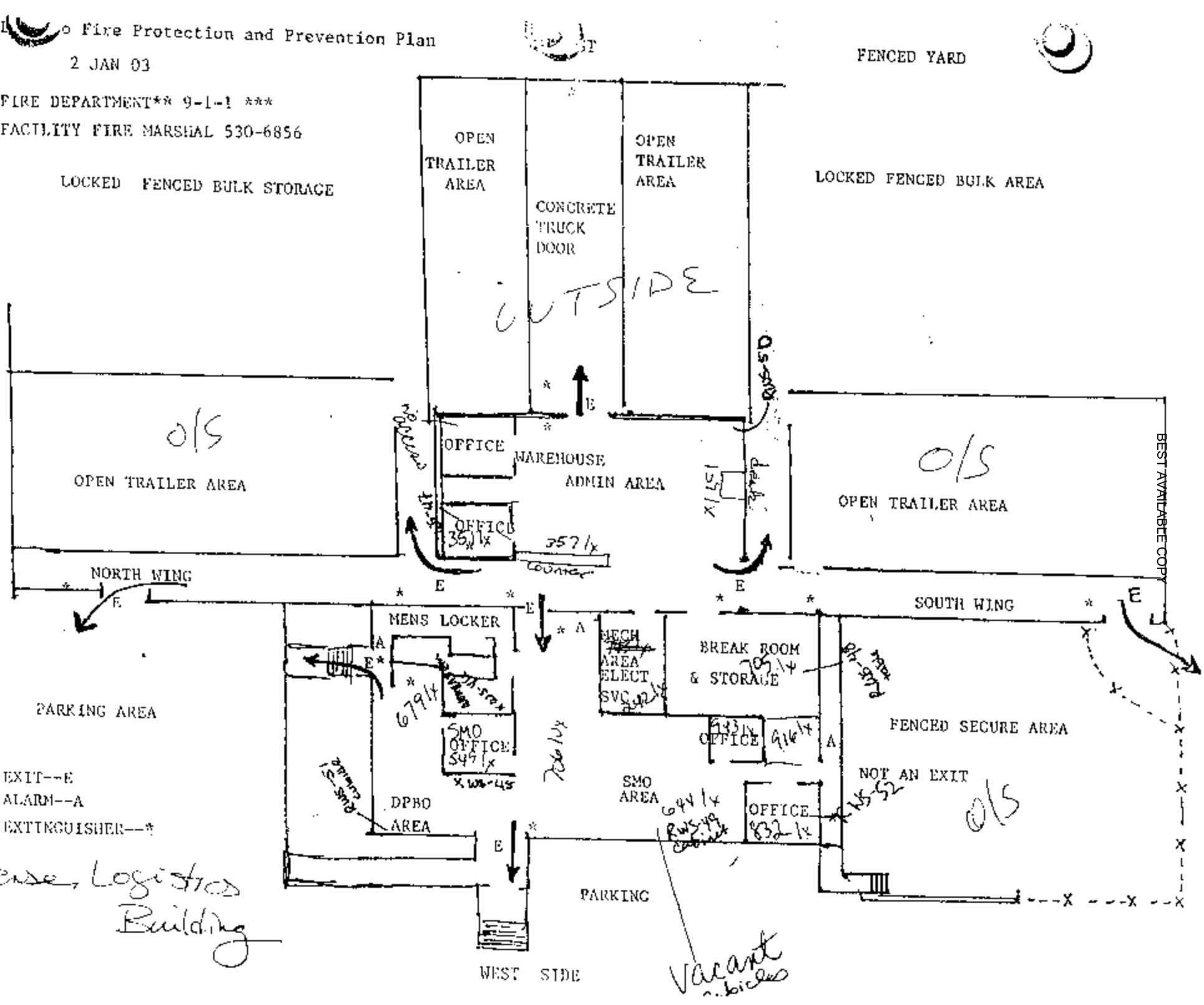
ARMORY DRAWING

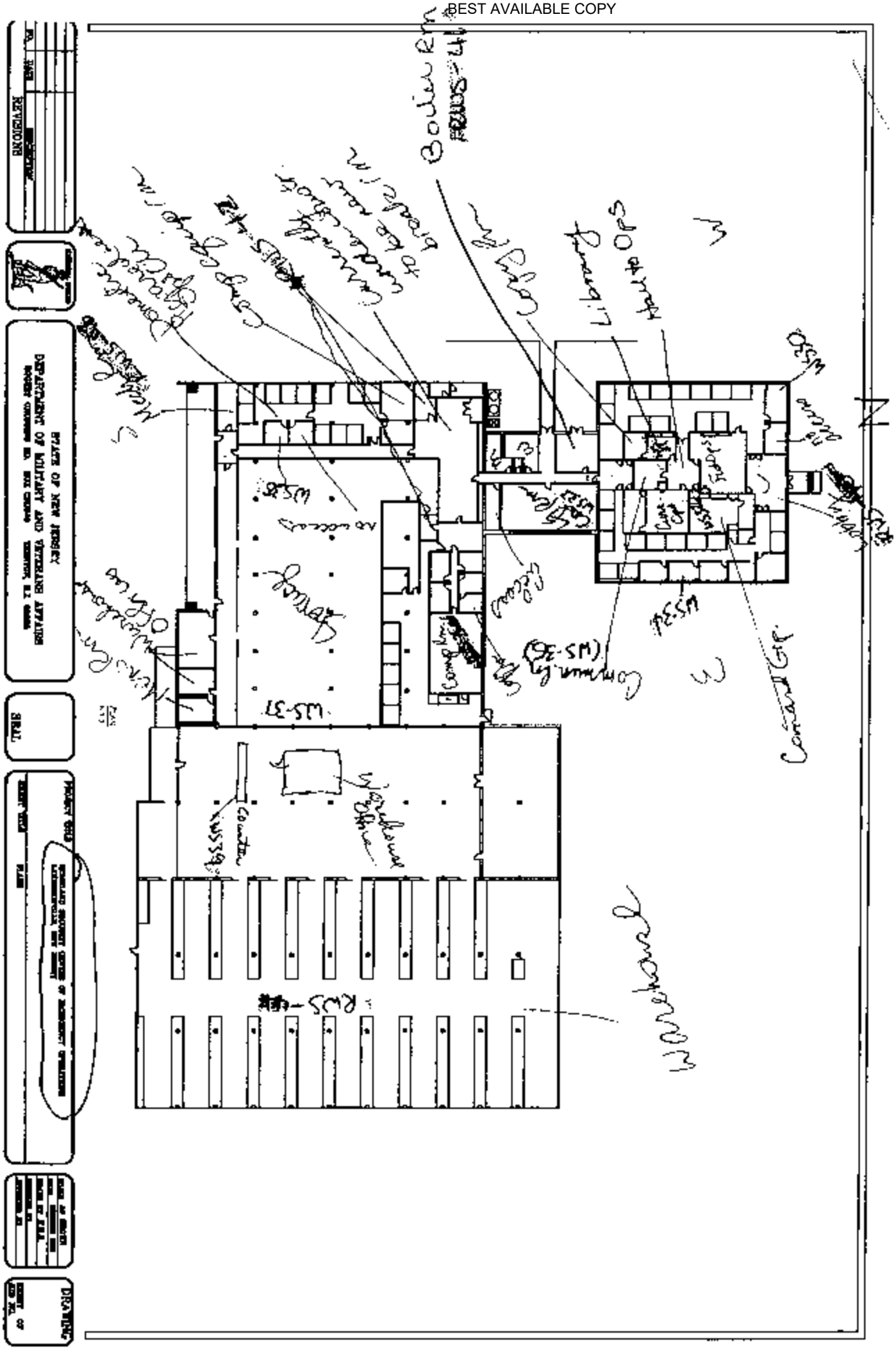
ENCL o Fire Protection and Prevention Plan

2 JAN 03

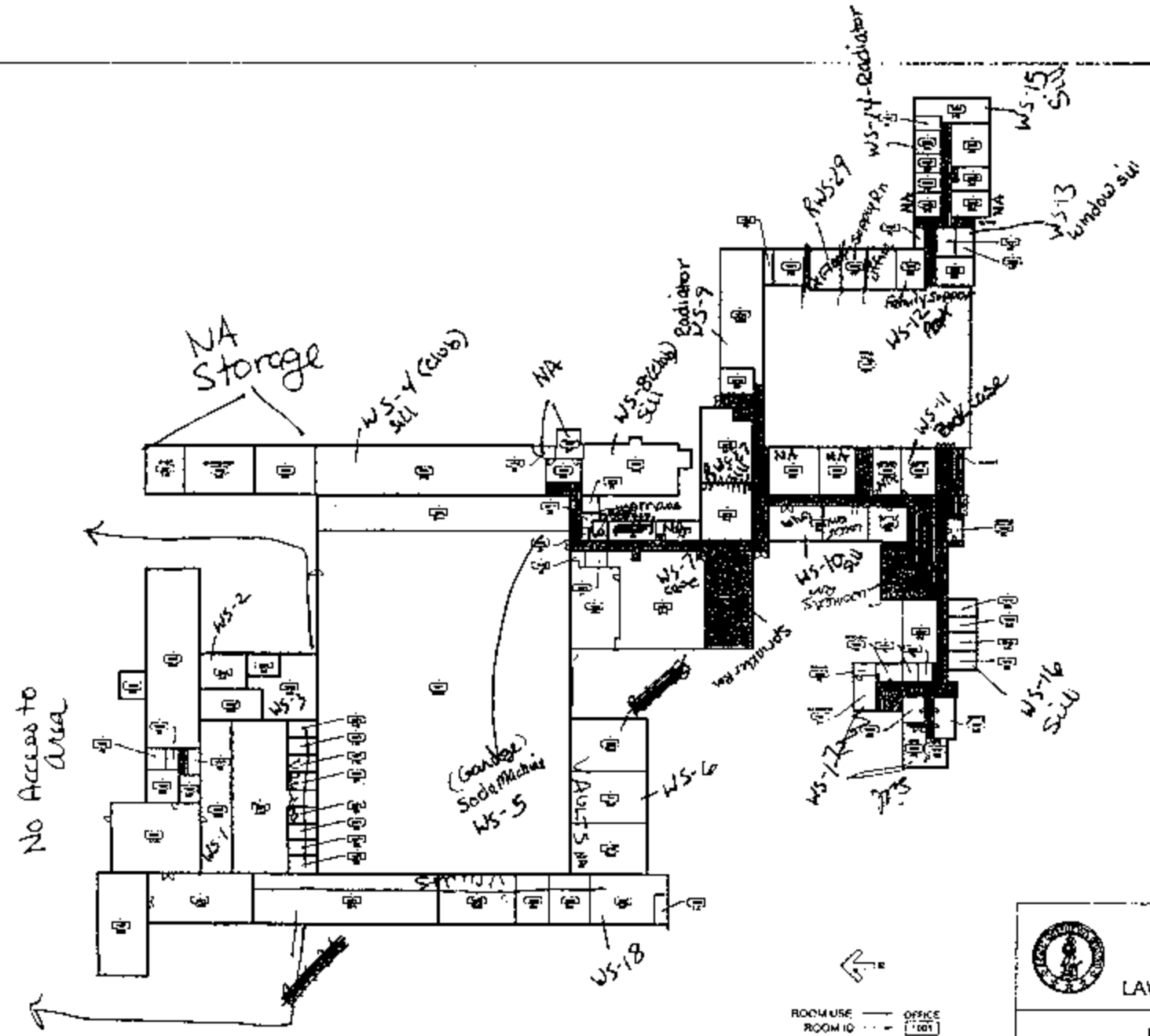
FIRE DEPARTMENT** 9-1-1 ***

FACILITY FIRE MARSHAL 530-6856





Armory



SF SM	Net.	85484 7941	SF SM	N/G Ratio: 0.868069

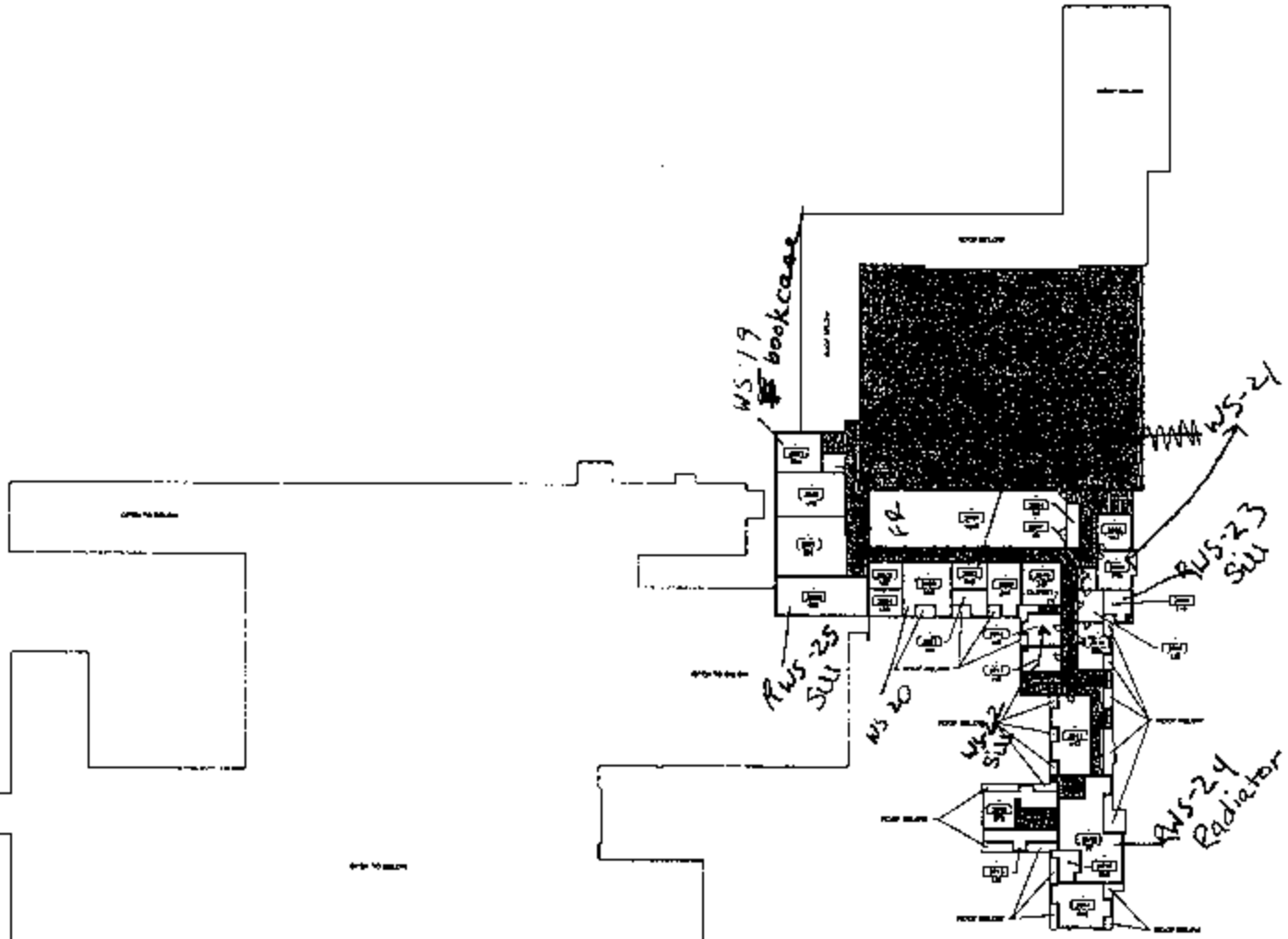
ROOM USE — OFFICE
ROOM ID — 1001
NET SF — 350

NEW JERSEY
Army National Guard
LAWRENCEVILLE ICRC / 34815

Facility Use Drawing
BUILDING 00002

Sheet: 1 OF 2	Floor: FIRST	
Survey Date: -	Version: DRAFT	Drawing No.: 00002_1

Armory



ROOM USE — OFFICE
ROOM ID — 1001
NET SF — 350

et:	8558	SF	N/G Ratio:	0.404882
	795	SM		

NEW JERSEY
Army National Guard
LAWRENCEVILLE ICRC / 34B15

Facility Use Drawing
BUILDING 00002

Sheet: 2 OF 2	Floor: SECOND		
Survey Date: -	Version: DRAFT	Drawing No. 00002 2	

APPENDIX B

PERSONNEL LIST

Armory

NEW JERSEY ARMY NATIONAL GUARD

Headquarters 50th Brigade, 42nd Infantry Division
151 Eggerts Crossing Road
Lawrenceville, New Jersey 08625-2897

Brigade Bulletin No. 03-51 **28 July 2003**

Brigade Telephone Directory

1. Enclosed are the new telephone numbers and extensions for the 50th Brigade Headquarters in Lawrenceville. These numbers are effective immediately, please update your rosters and speed dials accordingly. KFOR numbers will be published when installed.

Name	Position	Phone Number
Non-Responsive	Brigade CDR / AO (FTSS)	609-671-6610
	S1 (FTS)	609-671-6608
	Assistant S4 (FTS)	609-671-6604
	Training Officer (FTS)	609-671-6616
	Operations SGM (FTS)	609-671-6606
	S4 NCO (FTS)	609-671-6603
	MPT (FTS)	609-671-6609
	Legal NCO (FTS)	609-671-6613
	Unit Administrator (FTS)	609-671-6670
	Readiness NCO (FTS)	609-671-6661
	Unit Supply (FTS)	609-530-7061
	FULL TIME ARMORS	609-671-6619
	Bde XO / KFOR OIC	609-671-6607
	KFOR Training Officer	To Be Published
	KFOR EOC NCO	To Be Published
	(W) 856 589 0874	
	S3	609-671-6602
	C&E Officer	609-671-6612
	Brigade CSM	609-671-6601
	HHC CDR	609-671-6660
	HHC 1SG	609-671-6662
	MP Platoon SGT	609-671-6645
	MP	609-671-6646
	Faimily Support	609-671-6681 Fax 609-671-6682
	FAX	609-671-6635

2. As of 28 July, the 50th Brigade numbers in Fort Dix will not be manned. Calls to the old numbers will not be answered. Point of Contact is MAJ Non-Responsive

(S1, OFFICIAL, JAH, MAJ)

DISTRIBUTION:
A

609-221-0800 Non-Responsive BDE Chaplain

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APPENDIX C

HAZARDOUS MATERIALS LIST

NOT PROVIDED

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELA
AIHA

Client:	National Guard Bureau	**Job Name:**	Armory/Homeland Security/Logistes	**Chain Of Custody:**	128454
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Lawrenceville, NJ	**Date Analyzed:**	6/16/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	16-Jun-04
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
0448544	WS-4	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.9	ug/ft²	
0448545	WS-5	Flame	Wipe	****	0.111	108.01	ug/ft²	5000	ug/ft²	
0448546	WS-7	Furnace	Wipe	****	0.111	13.50	ug/ft²	20	ug/ft²	
0448547	WS-8	Furnace	Wipe	****	0.111	13.50	ug/ft²	37	ug/ft²	
0448548	WS-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.4	ug/ft²	
0448549	WS-10	Furnace	Wipe	****	0.111	67.51	ug/ft²	140	ug/ft²	
0448550	WS-11	Furnace	Wipe	****	0.111	33.75	ug/ft²	63	ug/ft²	
0448551	WS-12	Furnace	Wipe	****	0.111	13.50	ug/ft²	16	ug/ft²	
0448552	WS-13	Furnace	Wipe	****	0.111	33.75	ug/ft²	67	ug/ft²	
0448553	WS-14	Furnace	Wipe	****	0.111	13.50	ug/ft²	21	ug/ft²	
0448554	WS-15	Furnace	Wipe	****	0.111	67.51	ug/ft²	190	ug/ft²	
0448555	WS-16	Furnace	Wipe	****	0.111	33.75	ug/ft²	120	ug/ft²	
0448556	WS-17	Furnace	Wipe	****	0.111	13.50	ug/ft²	49	ug/ft²	
0448557	WS-19	Furnace	Wipe	****	0.111	2.70	ug/ft²	16	ug/ft²	
0448558	WS-20	Furnace	Wipe	****	0.111	33.75	ug/ft²	77	ug/ft²	
0448559	WS-21	Furnace	Wipe	****	0.111	13.50	ug/ft²	120	ug/ft²	
0448560	WS-22	Furnace	Wipe	****	0.111	13.50	ug/ft²	33	ug/ft²	
0448561	RWS-23	Furnace	Wipe	****	0.111	33.75	ug/ft²	140	ug/ft²	
0448562	RWS-24	Furnace	Wipe	****	0.111	2.70	ug/ft²	22	ug/ft²	
0448563	RWS-25	Furnace	Wipe	****	0.111	2.70	ug/ft²	13	ug/ft²	

An AIHA (#8863), NVLAP (# 101143), & New York 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

Client:	National Guard Bureau	**Job Name:**	Armory/Homeland Security/Logistics	**Chain Of Custody:**	128454
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Lawrenceville, NJ	**Date Analyzed:**	6/16/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	16-Jun-04

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
0448564	RWS-27	Furnace	Wipe	****	0.111	67.51	ug/ft^2	230	ug/ft^2	
0448565	RWS-29	Furnace	Wipe	****	0.111	67.51	ug/ft^2	150	ug/ft^2	
0448566	FR-1	Flame	Wipe	****	0.111	108.01	ug/ft^2	310	ug/ft^2	
0448567	FR-2	Flame	Wipe	****	0.111	108.01	ug/ft^2	2400	ug/ft^2	
0448568	FR-3	Flame	Wipe	****	0.111	108.01	ug/ft^2	25000	ug/ft^2	
0448569	FR-4	Flame	Wipe	****	0.111	108.01	ug/ft^2	1900	ug/ft^2	
0448570	FR-5	Flame	Wipe	****	0.111	108.01	ug/ft^2	2500	ug/ft^2	
0448571	WS-30	Furnace	Wipe	****	0.111	2.70	ug/ft^2	7.7	ug/ft^2	
0448572	WS-31	Furnace	Wipe	****	0.111	2.70	ug/ft^2	4	ug/ft^2	
0448573	WS-32	Furnace	Wipe	****	0.111	2.70	ug/ft^2	4.4	ug/ft^2	
0448574	WS-33	Furnace	Wipe	****	0.111	2.70	ug/ft^2	6.2	ug/ft^2	
0448575	WS-34	Furnace	Wipe	****	0.111	2.70	ug/ft^2	4.6	ug/ft^2	
0448576	WS-35	Furnace	Wipe	****	0.111	2.70	ug/ft^2	11	ug/ft^2	
0448577	WS-36	Furnace	Wipe	****	0.111	67.51	ug/ft^2	180	ug/ft^2	
0448578	WS-37	Furnace	Wipe	****	0.111	2.70	ug/ft^2	17	ug/ft^2	
0448579	WS-38	Furnace	Wipe	****	0.111	2.70	ug/ft^2	5.8	ug/ft^2	
0448580	WS-39	Furnace	Wipe	****	0.111	13.50	ug/ft^2	49	ug/ft^2	
0448581	RWS-40	Furnace	Wipe	****	0.111	2.70	ug/ft^2	4.6	ug/ft^2	
0448582	RWS-41	Furnace	Wipe	****	0.111	13.50	ug/ft^2	37	ug/ft^2	
0448583	RWS-42	Furnace	Wipe	****	0.111	2.70	ug/ft^2	21	ug/ft^2	

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Armory/Homeland Security/Logistcs	**Chain Of Custody:**	128454
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Lawrenceville, NJ	**Date Analyzed:**	6/16/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	16-Jun-04
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	
0448584	RWS-43	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²
0448585	RWS-44	Flame	Wipe	****	0.111	108.01	ug/ft²	740	ug/ft²
0448586	WS-45	Furnace	Wipe	****	0.111	2.70	ug/ft²	18	ug/ft²
0448587	WS-46	Furnace	Wipe	****	0.111	13.50	ug/ft²	39	ug/ft²
0448588	WS-47	Furnace	Wipe	****	0.111	33.75	ug/ft²	88	ug/ft²
0448589	RWS-48	Furnace	Wipe	****	0.111	13.50	ug/ft²	87	ug/ft²
0448590	RWS-49	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.4	ug/ft²
0448591	RWS-50	Furnace	Wipe	****	0.111	33.75	ug/ft²	100	ug/ft²
0448592	RWS-51	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.7	ug/ft²
0448593	RWS-52	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.2	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 results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted] Non-Responsive

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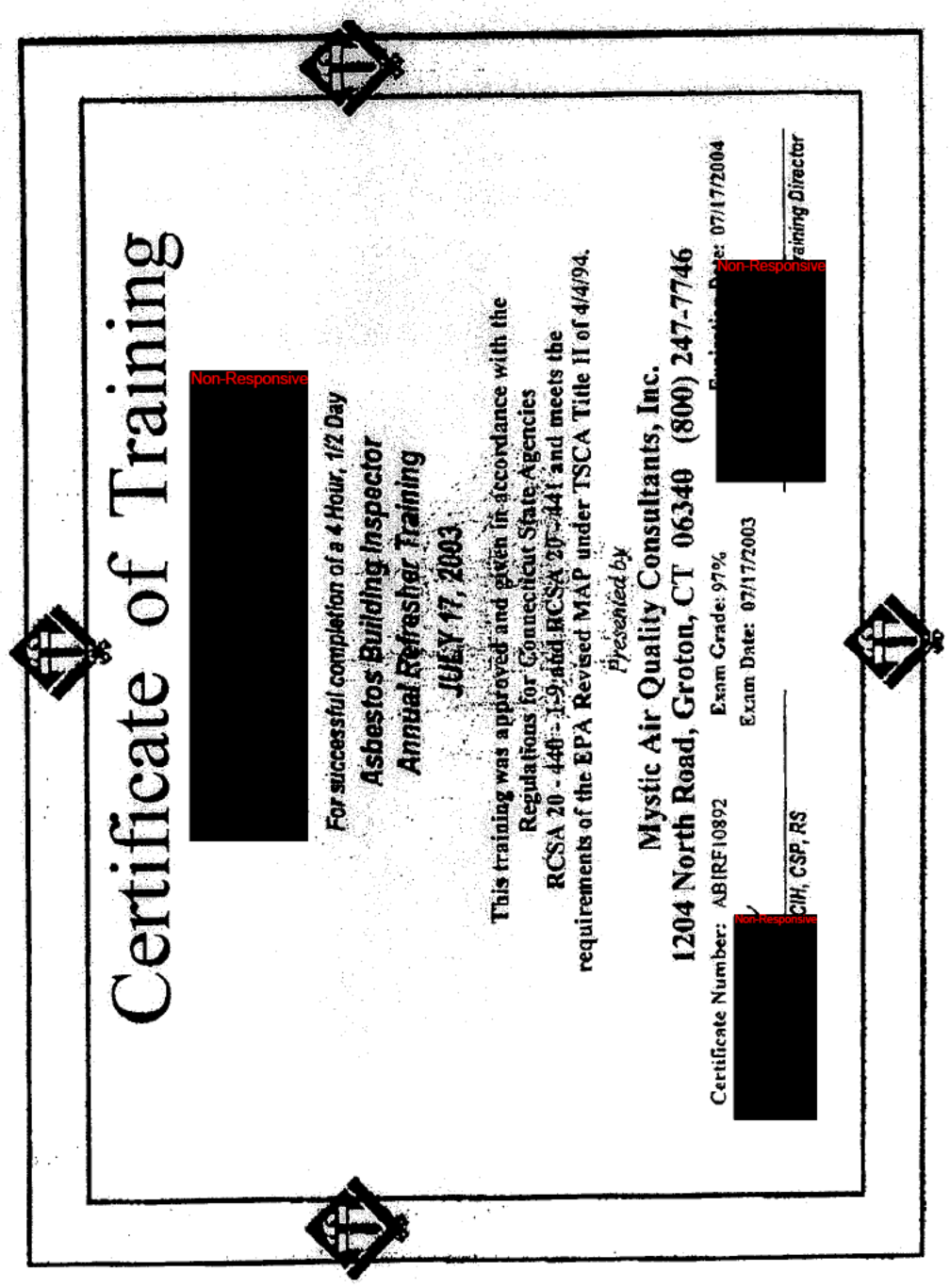
APPENDIX E

TRAINING CERTIFICATES


Certificate of Training
Non-Responsive
For successful completion of a 4 Hour, 1/2 Day
Asbestos Building Inspector
Annual Refresher Training
JULY 17, 2003
This training was approved and given in accordance with the
Regulations for Connecticut State Agencies
RCSA 20 - 440 - 1-9 and RCSA 20 - 441 and meets the
requirements of the EPA Revised MAP under TSCA Title II of 4/4/94.
Presented by
Mystic Air Quality Consultants, Inc.
1204 North Road, Groton, CT 06340 (800) 247-7746
Certificate Number: ABIRF10892
Exam Grade: 97%
Exam Date: 07/17/2003
Non-Responsive
CIH, CSP, RS
Non-Responsive
Training Director

APPENDIX F

PHOTOGRAPHS

Photo 1:
Dining Room-Water Damaged Tiles

Photo 2:
Office near Dining/Supply-Water Damage

Photo 3:
ACM Floor Tiles Throughout

Photo 4:
Supply Room Storage

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Photo 5:
Garage Flammable Cabinet

Photo 6:
Fire Extinguishers-On Ground

Photo 7:
Garage-Electrical Panel-Obstructed

Photo 8:
Room 173-Chemical Storage

Photo 9:
Room 173-Flammable Cabinet

Photo 10:
Room 173-Right to Know Center

Photo 11:
Boiler

Photo 12:
Former Firing Range

Photo 14:
Exterior

Photo 13:
Exterior

APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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. Air samples collected on individuals in the armory were well below OSHA's permissibla 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 H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose
1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References
Related publications are listed below.
a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program)
b. AR 11-34 (The Army Respiratory Protection Program)
c. AR 40-5 (Preventive Medicine)
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR) Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges)

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 5th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ (PREFERRED METHOD)- Pre moistened

(b) Thirty seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

(c) Eleven (11) centimeters (cm) diameter Whatman #41 paper

(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, an unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance
a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include--
(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include
(a) A baseline blood lead level
(b) A complete blood count (CBC)
(c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repealed for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:
a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples

Order From	Catalog Number
a. Supelco Inc Supelco Park Bellefonte, PA 16823	2-3381M

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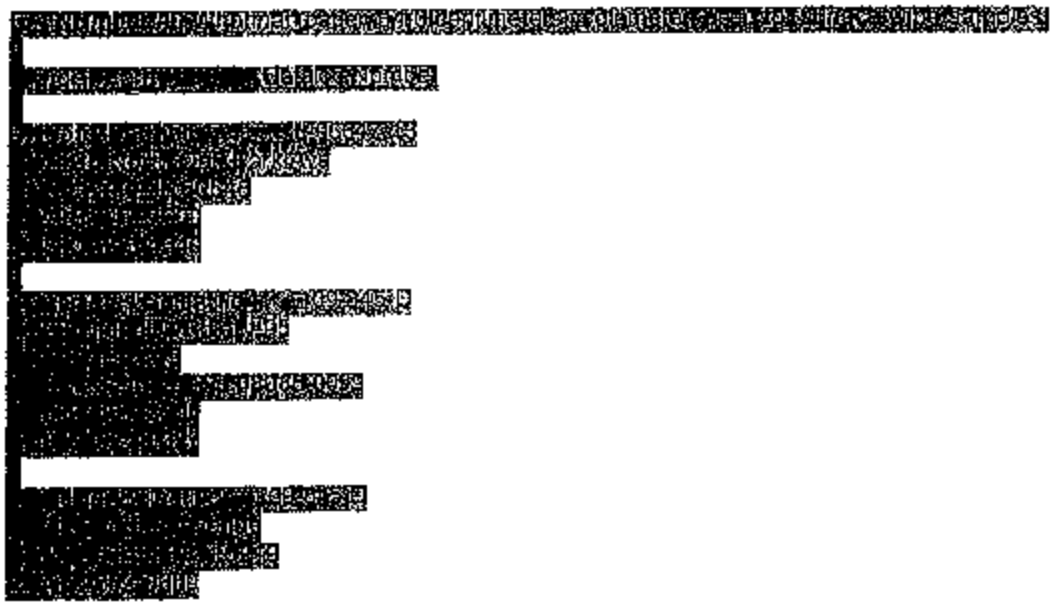
APPENDIX E (Continued)

800-247-6628
800-359-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472



E-5. Glass container (25 milliliter) for collection and shipment of media

Order From Catalog Number

a. Pierce Chemical Co 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75\ ug}{100\ cm^2} \quad \frac{929\ cm^2}{1\ sq\ ft}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 ug/sq\ ft$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft – Square foot

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APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address		Point of Contact *(name & phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation		Date Collected	Date Shipped
Analysis Desired			

Sampling Data

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	___ Persons Exposed	___ Hrs/Day	Method of Collection
Analysis Desired			
Sampling Data			

Sample No.									
Pump No.									B
Time On									L
Time Off									A
Total Time (min)									N
Flow Rate (LPM)									K
Volume (liters)									
GA/BZ									
Employee Name/ID									
Laboratory No.									

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer

Comments to Lab:

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

COMPLIANCE MANAGEMENT INTERNATIONAL

1215 Manor Drive, Suite 205
Mechanicsburg, PA 17055
Phone: 717.590.7031
Fax: 717.590.7936
www.complianceplace.com

Industrial Hygiene Survey Report

National Guard Facility
Lawrenceville Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Lawrenceville Readiness Center** **151 Eggert Crossing Road** **Lawrenceville, NJ, 08648-2805**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**February 25, 2013**
Report Date:	**April 3, 2013**

Non-Responsive

Senior Industrial Hygienist

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on February 25, 2013, at the Lawrenceville Readiness Center located at 151 Eggert Crossing Road, Lawrenceville, NJ 08648. The survey was performed by Mr. Non-Responsive.

1. Lead bulk, surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in six locations. See Section 3.0 for sampling results.

2. Lighting levels did not meet the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in one location. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Relative humidity levels were less than the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in all locations.

    b. Temperature levels met the ASHRAE recommended guideline of 68-79 degrees F in all locations.

    See Section 5.0 for detailed sampling results.

4. Several conditions or factors that could affect indoor air quality were observed at the time of this survey. This includes:

    a. Reported roof leaks.
    b. Some water damaged ceiling tiles were observed in several locations in the facility.

5. Suspect asbestos containing materials were observed. Floor tile materials were observed to be intact and in good condition. Damaged pipe insulation was sampled and analyzed. See Section 6.0 for detailed report findings.

Section 2.0 Operation Description & Observations

The Lawrenceville Readiness Center is mainly an administrative facility with a drill hall, offices, classroom, and converted firing range/storage areas. There were approximately 25 full-time employees stationed at this facility at the time of this survey.

The building was initially constructed in the 1920s. Two additional additions were constructed during the 1940s and 1950s. The building is a two-story structure with a brick exterior. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, floor tile and some carpet.

The Heating, Ventilation, and Air-Conditioning (HVAC) system consists of an oil-fired forced water furnace for heat and window units for air conditioning.

The area of the building that was once a firing range has been converted into a storage area. This area is seldom used and is scheduled to be renovated into office space. No firing range components remain.

There is no child-care facility in the building.

Overall housekeeping practices were adequate.

No ergonomic concerns were reported.

Section 3.0 Lead Testing

Due to the age of the building there is a high potential for lead based paint to be present. Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Bulk (%)	Air ug/m^3	Surface ug/ft^2
1	Drill Hall	*	<5.7	*
2	Office 213	*	<6	*
3	Blank	*	<3	*
4	Drill Hall – Top of Cannon	*	*	<110
5	Drill Hall – Floor Center	*	*	<110
6	**Drill – Fan Cabinet**	*****	*****	**3400**
7	**Converted Firing Range - Wall Com Box**	*****	*****	**12000**
8	**Converted Firing Range - Contents**	*****	*****	**930**
9	**Converted Firing Range – Unit Ventilator**	*****	*****	**1400**
10	**Converted Firing Range – Floor**	*****	*****	**1300**
11	**Outside Converted Firing Range – Floor**	*****	*****	**210**
12	S-4 Cabinet	*	*	<110
13	2nd Floor Hall - Floor	*	*	<110
14	S-1 HR - Cabinet	*	*	<110
15	Children's Area – Window Sill	*	*	<110
16	50th Brigade HQ - Cabinet	*	*	<110
17	Food Services Dining – Window Sill	*	*	<110
18	Food Services Kitchen - Cabinet	*	*	<110
19	Military supply Vault - Shelf	*	*	<110
20	Armor's Break Room - Shelf	*	*	<110
21	Food Services Sm. Dining – Window Sill	*	*	<110
22	Food Services Sm. Kitchen - Stove	*	*	<110
23	Office 213 – Wall Paint Chip	0.51	*	*
25	Wipe Blank	*	*	<12
-	Criteria	0.5	50	200

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead bulk, surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following locations:

    - Drill – Fan Cabinet
    - Converted Firing Range - Wall Com Box
    - Converted Firing Range – Contents
    - Converted Firing Range – Unit Ventilator
    - Converted Firing Range – Floor
    - Outside Converted Firing Range – Floor

  Restrict access to the converted firing range and decontaminate the area before starting renovations. Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of 200 ug/ft^2.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

- Paint was observed to be peeling on the wall in office 213. A bulk sample was collected and determined to contain 0.51% lead. This is greater than the EPA definition of lead based paint (0.5%). All areas of peeling paint should be remediated and repaired.

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Drill Hall	53.8	10	Yes
Food Services Sm. Dining	62.2	10	Yes
Food services Sm. Kitchen	78.2	50	Yes
Family Assistance Office	56.4	30 - 50	Yes
Office 131	106.4	30 - 50	Yes
1st Sgt. Office	40.1	30 - 50	Yes
Commander's Office	82.1	30 - 50	Yes
Executive Officer's Office	33.4	30 - 50	Yes
Office 126	67.0	30 - 50	Yes
Office 127	68.7	30 - 50	Yes
Division of Veteran Services Office	79.5	30 - 50	Yes
Women's Toilet	39.5	5	Yes
Armor's Office	56.4	30 - 50	Yes
Men's Toilet	53.8	5	Yes
Recruiting Office	42.1	30 - 50	Yes
Exercise Room	35.2	30	Yes
Food Services - Dining	32.2	10	Yes
Food Services - Kitchen	62.4	50	Yes
Garden Room - Dining	12.6	10	Yes
Conference 220	127.2	30	Yes
Cpt. [redacted]'s Office	72.5	30 - 50	Yes
Office 217A	62.1	30 - 50	Yes
Office 214	81.5	30 - 50	Yes
[redacted]s Office	92.8	30 - 50	Yes
Office 213	64.3	30 - 50	Yes
Conference 211	73.3	30	Yes
Office 205	60.5	30 - 50	Yes
Office 206	70.3	30 - 50	Yes
Office 210	62.1	30 - 50	Yes
Brigade Commander's Office	83.7	30 - 50	Yes
Office 207A	69.2	30 - 50	Yes
Office 202	96.0	30 - 50	Yes
Conv. Firing Range - Storage	**3.2**	**30**	**No**

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guideline in the converted firing range/storage area. Lighting should be improved in this area.

Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature and relative humidity ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (◦F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Family Assistance Center	72.9	**22.6**	696	1.9
Office 126	73.2	**19.8**	741	0.0
Office 127	73.0	**18.3**	663	0.0
Armor's Office	73.9	**20.0**	491	0.0
Exercise Room	74.1	**21.5**	516	0.1
Office 217A	72.1	**19.1**	622	0.0
Office 214	72.9	**20.4**	662	0.0
Conference 212	73.9	**21.4**	759	0.0
Brigade Commander's Office	72.1	**20.1**	540	0.0
Office 207A	72.7	**21.5**	656	0.0
Outdoors	50.2	37.0	313	0.8
Criteria	**68-79**	**30-60**	**<1,013**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Relative humidity levels were outside the recommended guidelines in all sampled areas. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction or outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level for this survey. For this survey, carbon dioxide levels did not exceed the recommended ceiling of 1,013 ppm. This is an indication that outdoor air ventilation is adequate.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide.

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observations were noted:

    - A history of roof leaks was reported throughout the facility. This was evident by the water-stained ceiling tiles in Offices 213 and 205 and peeling paint from the wall in Office 213. All sources of water infiltration should be identified and repaired. Water stained ceiling tiles should be removed and replaced.
    - Overall housekeeping was adequate.

Section 6.0 Suspect Asbestos Containing Building Materials

Due to the age of the building (parts greater than 90 years old), it is likely that asbestos-containing materials (ACM) are present in the facility. The following suspect ACM was noted at the time of this survey:

1. Floor tiles (9" x 9") and associated mastic are present throughout the facility. These appear intact and undamaged at time of this survey.

2. Pipe insulation is present throughout the facility. One area of pipe insulation was observed to be damaged in Office 126. A bulk sample of this material was collected and analyzed for asbestos content. No asbestos was detected in the sample.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	2/25/13	2.13 LPM
SKC Air Sampling Pump	647610	2/25/13	2.10 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	ARNG 3KNJ IH Survey	**Chain Of Custody:**	515230
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Lawrenceville, NJ	**Date Analyzed:**	3/5/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**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
13041199	24	NAD	--	--	--	--	40	--	--	--	--	60	PI	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

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) **515230**

Pg 1 of 2

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: ARNG 3KNJ IH Survey
2. Job Location: Lawrenceville, NJ
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Pers[redacted] @ phone # (410) 942-0273
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: [redacted] complinance place.com
Comments:	☐ 2 Day Date Due:	☐ Fax: [redacted] us.army.mil
	☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	☐ 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 ℃)

Metals Analysis
- ☒ Pb Paint Chip 1 (QTY)
- ☒ Pb Dust Wipe (wipe type GHOST) 20 (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 Swab (QTY)
- ☐ Surface Tape (QTY)
- ☐ Other (Specify) (QTY)
- ☐ Surface Vacuum Dust (QTY)
- ☐ Culturable ID Genus (Media) (QTY)
- ☐ Culturable ID Species (Media) (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	SPORE TRAP	TAPE	SWAB
1	DRILL HALL	2/25/13	526							X						
2	Room		501							X						
3	BLANK		—							X						
4	Room DRILL CANNON			100 cm²												
5	DRILL HALL Floor CTR															
6	DRILL HALL FAN CABINET															
7	FireRange wall Cont Box															
8	FireRange Contents															
9	FireRange Unit Ventil															
10	FireRange FLOOR															
11	FireRange OUTSIDE Floor															
12	5-4 CABINET															

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time:	Contact:	By:
Date/Time:	Contact:	By:
Date/Time:	Contact:	By:

[redacted]

LABORATORY STAFF ONLY

1. Date/Time RCVD: 2/28/13 @930 Via: FEDEX By (Print): [redacted]
2. Date/Time Analyzed: 3/6/13 @ By: [redacted] Sign: [redacted]
3. Results Reported To: Shirley Chapman/Ken Forsythe Via: Email Date: 3/6/13 Time: [redacted]

Initials: [redacted]

(MAY 2013)

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) 515230 Pg 2 of 2

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

Submittal Information:
1. Project Name: ARNG 3RNJ 1H Survey
2. Location: Lawrenceville, NJ
3. Job #: PO #: W912K6-09-A-0003
4. Contact Person: [redacted] @ [redacted]
5. Submitted By: [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
☑ Next Day ☐ 5 Day +
☐ 2 Day Date Due:
☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Incl[redacted] ith Report
☒ [redacted] complianceplace.com
☐ Fax: [redacted] us.army.mil
☐ 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 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)

Metals Analysis
☒ Pb Paint Chip 1 (QTY)
☒ Pb Dust Wipe (wipe type Ghost) 20 (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)

Microbial 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 IDENTIFICATION

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
13	2nd Fl. #411 FLOOR	2/25/13		100cm²				X								
14	S-1 AIR CABINET							X								
15	CHILDREN AREA SILL							X								
16	50th Brig. HQ CABINET							X								
17	FOOD SVRS DINING SILL							X								
18	FOOD SVRS KITCHEN CABINET							X								
19	MILITARY SUPPLY SHELF							X								
20	ARMORS BREAKRM							X								
21	SM. DINING AREA							X								
22	SM. KITCHEN STOVE							X								
23	ROOM 213							X			X					
24	ROOM 186						X				X					

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

LEAD WIPE #25 BLANK

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

Client:	National Guard Bureau	**Job Name:**	ARNG 3KNJ IH Survey	**Chain Of Custody:**	515230
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Lawrenceville, NJ	**Date Submitted:**	2/28/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	3/7/2013 **Report Date:** 3/7/2013

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
13041175	1	Flame	Air	526	N/A	5.7	ug/m^3	<3	<5.7	ug/m^3	
13041176	2	Flame	Air	501	N/A	6	ug/m^3	<3	<6	ug/m^3	
13041177	3	Flame	Air Blank	0	N/A	3	ug/m^3		<3	ug	
13041178	4	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041179	5	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041180	6	Flame	Wipe	****	0.108	110	ug/ft^2	370	3400	ug/ft^2	
13041181	7	Flame	Wipe	****	0.108	110	ug/ft^2	1300	12000	ug/ft^2	
13041182	8	Flame	Wipe	****	0.108	110	ug/ft^2	100	930	ug/ft^2	
13041183	9	Flame	Wipe	****	0.108	110	ug/ft^2	150	1400	ug/ft^2	
13041184	10	Flame	Wipe	****	0.108	110	ug/ft^2	140	1300	ug/ft^2	
13041185	11	Flame	Wipe	****	0.108	110	ug/ft^2	23	210	ug/ft^2	
13041186	12	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041187	13	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041188	14	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041189	15	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041190	16	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041191	17	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041192	18	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13041193	19	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	

AMA Analytical Services, Inc.

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ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 3KNJ IH Survey	**Chain Of Custody:**	515230
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Lawrenceville, NJ	**Date Submitted:**	2/28/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	3/7/2013 **Report Date:** 3/7/2013
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
13041194	20	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041195	21	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041196	22	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041197	25	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13041198	23	Flame	Paint Chip	****	N/A	0.01	%Pb		0.51	%Pb	

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

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515230 Pg 1 of 2

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

Submittal Information:
1. Job Name: ARNG 3KNJ IH Survey
2. Job Location: Lawrenceville, NJ
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Pers[redacted] @[redacted]
5. Submitted by[redacted] nature:[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/Tech Data Sheets with Report
☐ 24 Hours Time Due:	~~☒ Next Day~~ ☒ 5 Day +	☒ Email: [redacted] compliancepace.com
Comments:	☐ 2 Day NEM Date Due: 3/7/13	☐ Fax: [redacted]
	☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	☐ Verba[redacted]

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)

Metals Analysis
☒ Pb Paint Chip 1 (QTY)
☒ Pb Dust Wipe (wipe type GHOST) 20 (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 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
1	DRILL HALL	2/25/13	526							X						
2	ROOM		501							X						
3	BLANK		—							X						
4	ROOM DRILL CANNON			100 cm²												
5	DRILL HALL FLOOR CTR															
6	DRILL HALL FAN CABINET															
7	FIRE RANGE WALL COM BOX															
8	FIRE RANGE CONTENTS															
9	FIRE RANGE UNIT VENTIL															
10	FIRE RANGE FLOOR															
11	FIRE RANGE OUTSIDE FLOOR															
12	S-4 CABINET															

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

LABORATORY CUSTODY
1. Date/Time RCVD: 2/28/13 @ 0930 Via: FEDEX By (Print): [redacted] Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 7945 0135 0017

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) 515230 Pg 2&2

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

Submittal Information:
1. Job Name: ARNG 3KNJ IH Survey
2. Job Location: Lawrenceville, NJ
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Perso [redacted] [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:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☒ Next Day ☐ 5 Day +	☒ Email: [redacted]@complianceplace.com
Comments:	☐ 2 Day Date Due:	☐ Fax: [redacted]@us.army.mil
	☐ Results Required By Noon (Every Attempt Will Be Made to Accomodate)	☐ 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)

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) 20 (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 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
13 2nd	Fire Hall Floor	2/25/13		100cm²				X								
14	S-1 AR Cabinet	"						X								
15	Children Area Sill							X								
16	50th Brig HQ Cabinet							X								
17	Food Svrs Dining Sill							X								
18	Food Svrs Kitchen Cabinet							X								
19	Military Supply Shelf							X								
20	Armor's Break Rm							X								
21	Sm. Dining Area							X								
22	Sm. Kitchen Stove							X								
23	Room 213							X			X					
24	Room 136						X				X					

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time:	Contact:	By:
Date/Time:	Contact:	By:
Date/Time:	Contact:	By:

LEAD WIPE * 25 BLANK

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

Appendix B. Photographs

Lawrenceville Main Entrance

Office 126 Suspected ACM Pipe Insulation

Office 205 Water damage

Office 213 Paint Peeling

Appendix C. Floor Plan

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

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

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

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h)(3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 NOV 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Jersey 03079

FINAL
INDUSTRIAL HYGIENE SURVEY REPORT
MORRISTOWN ARMORY
MORRISTOWN, NEW JERSEY

July 2006
PN: 39741509

Non-Responsive

Office Manager

Non-Responsive

Project Manager

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APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Computer workstations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3
Lighting		
On the day of the survey, the illumination throughout the building was inadequate in most circumstances.	Increase lighting in the administrative and drill floor areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected from the facility in amounts greater than 200 $\mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 2
Asbestos		
A site-specific asbestos operations and maintenance plan was not available. No warning labels in janitorial or maintenance areas.	Maintain a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3
Mold		
Water damaged was observed throughout the facility. Mold growth could become an issue if left unattended.	Determine and repair source of water. Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4

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1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Morristown Armory located at 430 Jockey Hollow Road in Morristown, New Jersey 07960. This report includes an executive summary and a description of the site activities and findings and a list of conclusions and recommendations.

On March 24, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Morristown, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Armorer Non-Responsive of the New Jersey ARNG was Mr Non-Responsive site contact for this survey.

This armory is a two-story brick building, with an attached drill hall that is constructed primarily of brick and mortar. This facility is built on a concrete slab with a pitched asphalt roof. The building was constructed in 1936. A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Some computer workstation chairs could not be adjusted for height, the armrests were in a fixed position and keyboards in offices could not be adjusted. Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person. No complaints were received by URS concerning workstations at the time of this survey.

Water stains were visible throughout the 2nd floor.

2.2 Chemical and Physical Agents Sampled

2.2.1 Relative Humidity

Relative humidity levels on the day of the survey ranged from 20-25.7 % throughout the various building areas with an average of 21.64%. This average reading was below the recommended maximum of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from a low of 472 to a spike of 685 parts per million (ppm), with an average of 536.2 ppm. The outside reading was 320 ppm.

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically,

carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants. ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. Given a background level of 320 ppm on the day of the survey, the ASHRAE limit would be 1,020 ppm.

2.2.3 Carbon Monoxide

Carbon monoxide concentrations ranged from 0 to 0.4 ppm on the day of the survey. ASHRAE (62.1-2004) recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

2.2.4 Lighting

Lighting in the administrative areas was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Lighting Footcandles	Recommended Lighting Footcandles
Armorer's Office	Office	37	50
Firing Range	Former Firing Range	15	50
Drill Floor Center	Drill Floor	24	30
Room 58	Office	27	50

Table 2-1 (Cont)
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Lighting Footcandles	Recommended Lighting Footcandles
Office 29	Office	34	50
Office 26	Office	28	50
Office 19	Office	34	50
Office 16	Office	29	50
Office 12	Office	18	50
Office 11	Office	31	50
Office 10	Office	26	50
Office 13	Office	35	50
Mail Room	Office	35	50
Office 14	Office	40	50
Office 15	Office	17	50
Office 9	Office	41	50
Office 8	Office	47	50
Office 7	Office	41	50
Office 4	Office	37	50

On the day of the survey, lighting levels were inadequate in all offices.

2.2.5 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) in this area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020)(EPA-600/R-93-116).Suspect ACM debris was observed at the entrance to a crawlspace beneath the building. No other suspect damaged ACM was observed.

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)).

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

GENERAL: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

ERGONOMICS: The ergonomic issues were minor with regard to desks, chairs and monitors although they need to be fitted to the workers.

LIGHTING: On the day of the survey the illumination in the administrative area was inadequate in all offices and generally throughout the facility. URS recommends increasing the area lighting or add supplemental task lighting for each workstation in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

ASBESTOS: Floor tile present throughout this building area was presumed to contain asbestos in a concentration greater than one percent but was in good condition. The bulk sample collected in the entrance to the crawlspace was determined to contain 15% Chrysotile asbestos.

MOLD: Water stains were visible throughout the second floor and could lead to significant mold growth

3.0 FORMER INDOOR FIRING RANGE

3.1 Operation Description

The site has dismantled the former indoor firing range which is currently used for storage. Standing water was observed at the bleacher area.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1
Levels of Lead Dust Found in the Former Firing Range

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Acceptable Surface Contamination Level ($\mu g/ft^2$)
Former Firing Range-Floor	0324-01	0.108	15,000	200
Former Firing Range-Floor	0324-02	0.108	510	200
Blank	0225-LWBlank	N/A	2.2 µg	N/A

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: Wipe sampling for lead dust was performed in this area and results indicated levels greater than recommended by the National Guard Bureau Region North Industrial Hygiene Office (See Appendix G). Guidelines for the clean-up and rehabilitation of former indoor firing ranges are included in Appendix H.

MOLD: Standing water was observed in the bleacher area and could lead to significant mold growth.

4.0 DRILL HALL

4.1 Operation Description

The drill hall is a large open area used for assembling personnel and storing vehicles. The walls are constructed of cinder blocks with a concrete floor.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using Ghost Wipes™, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1
Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
Drill Floor Southeast-Floor	0324-03	0.108	1,600	200
Drill Floor Southwest Bleacher Parapit Wall	0324-04	0.108	21	200
Drill Floor Bleacher Area- I –Beam Support	0324-05	0.108	1500	200
Blanks	Blanks	N/A	<2.8 µg	N/A

Sample numbers and locations can be found on the site map in Appendix A.

4.2.2 Asbestos

Bulk samples were not collected in this building area.

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: Two dust wipe samples collected from bleacher area of the drill floor were above 200 micrograms/ square foot. This is the level recommended by the NGB Region North Industrial Hygiene Office (Appendix G). The U.S. Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1910.1025 and 29 CFR 1926.62 are designed to protect workers potentially exposed to elevated airborne levels of lead.

5.0 BOILER ROOM

5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

5.2 Chemical and Physical Agents Sampled

5.2.1 Asbestos

Not applicable to this operation

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

Not applicable to this operation.

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is required for this site.

6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

6.4 Hazard Communication

A program was found regarding hazard communication. Training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities for Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

APPENDIX A

ARMORY DRAWING

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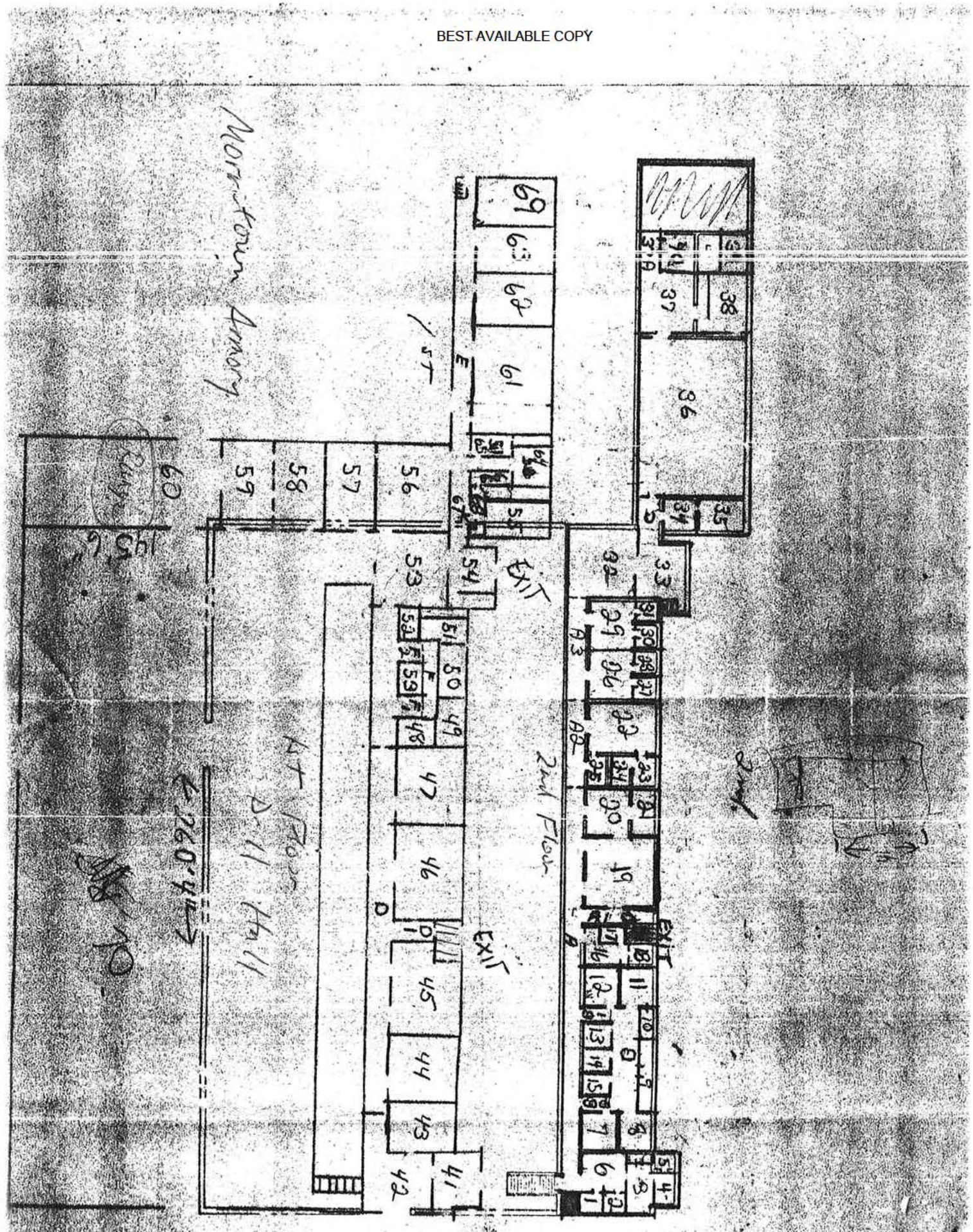

APPENDIX B

PERSONNEL LIST

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3-24-04

Morristown -Full Time Personnel

Non-Responsive

LT

CPT

1SG

SGT

SPC

SFC

SFC

SSG

SSG

SSG

S

SSG

SSG

SSG

Non-Responsive

APPENDIX C

HAZARDOUS MATERIALS LIST

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APPENDIX D

ANALYTICAL RESULTS

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128489
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Morristown, NJ	**Date Analyzed:**	07/01/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	01-Jul-04
Attention:	[redacted]				

Page 1 of 1

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
0449227	0324-01	Flame	Wipe	****	0.108	111.52 ug/ft²	15000 ug/ft²	
0449228	0324-02	Flame	Wipe	****	0.108	111.52 ug/ft²	510 ug/ft²	
0449229	0324-03	Flame	Wipe	****	0.108	111.52 ug/ft²	1600 ug/ft²	
0449230	0324-04	Furnace	Wipe	****	0.108	5.58 ug/ft²	21 ug/ft²	
0449231	0324-05	Flame	Wipe	****	0.108	111.52 ug/ft²	1500 ug/ft²	
0449232	0324-06	Furnace	Wipe	****	0.108	2.79 ug/ft²	< 2.8 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 results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] ...ical Manager: [redacted]

An AIHA (#8863), NVLAP (# 101143), & New York 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

NVLAP
NY ELAP
AIHA

CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128489
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation Havre de Grace, Maryland 21078	**Job Location:**	Morristown, NJ	**Date Analyzed:**	05/28/2004
		Job Number:	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002		
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	Analyst ID	Comments
0449233	0324-20	15	15	—	—	—	20	—	TR	—	—	65	Gray	CK	

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"

[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, NIST, or any agency of the Federal Government.

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APPENDIX E

TRAINING CERTIFICATES

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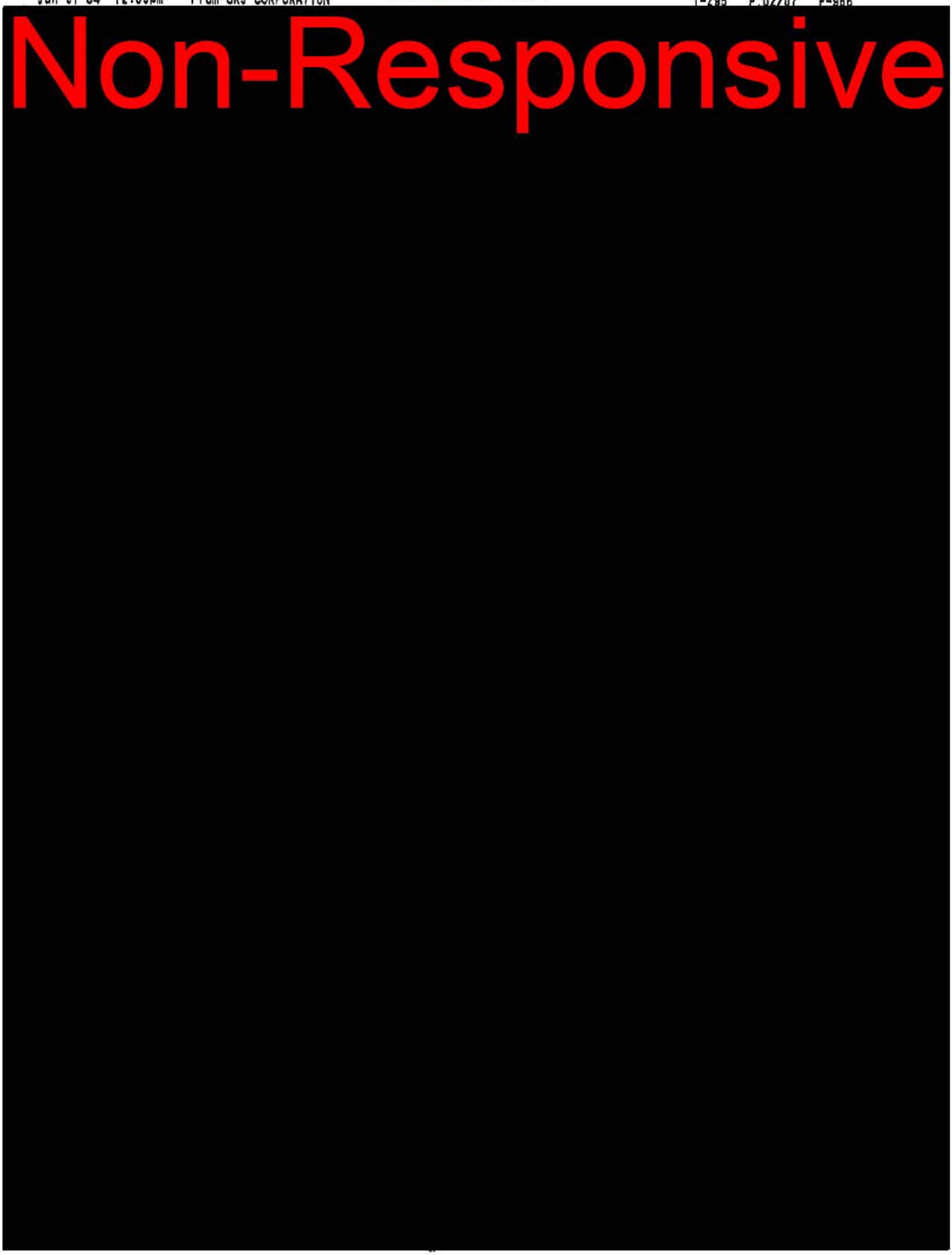
Non-Responsive

Certificate of Training

Non-Responsive

For successful completion of an 8 Hour, 1 Day

Asbestos Inspector & Management Planner

Annual Refresher Training

MARCH 25, 2003

This training was approved and given in accordance with Regulations for Connecticut State Agencies RCSA 20-440 - 1-9 and RCSA 20-441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94

Presented by

Mystic Air Quality Consultants, Inc.
1204 North Road, Groton, CT 06340 (800) 247-7746

Certificate Number: IMPR10543 **Exam Grade:** 100% **Expiration Date:** 03/25/2004

Exam Date: 03/25/2003

Non-Responsive

H, CSP, RS

Non-Responsive

Training Director

APPENDIX F

PHOTOGRAPHS

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Photo 0001: Former Indoor Firing Range – Wipe sample 0324-01

Photo 0002: Former Indoor Firing Range – Wipe sample 0324-02

Photo 0003: Drill Floor – Wipe Sample 0324-03

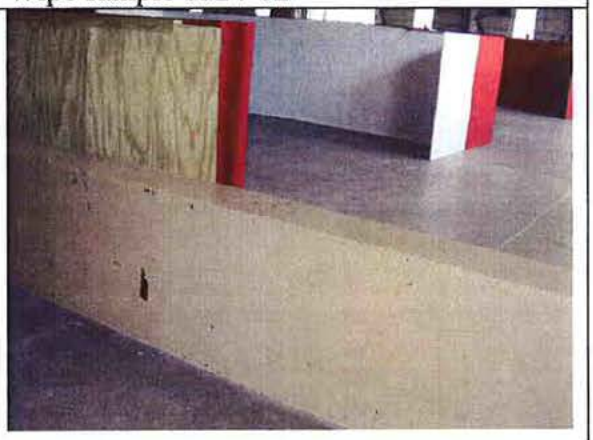

Photo 0004: Drill Floor – Wipe Sample 0324-04

Photo 0005: Drill Floor – Wipe Sample 0324-05

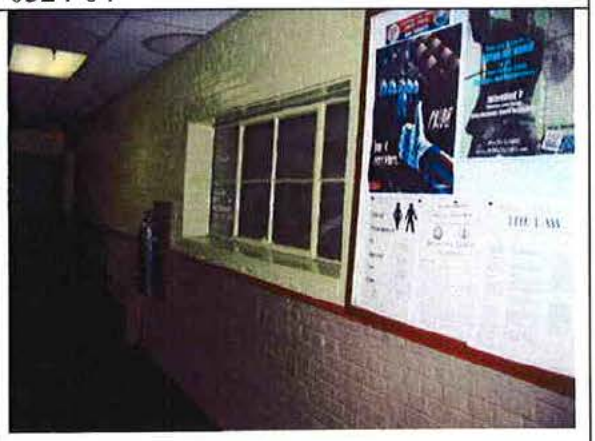

Photo 0016: 2nd Floor Hall – Water stained ceiling tile

Photo 0018: 2nd Floor Hall – Water stained ceiling Tiles

Photo 0021: Drill Hall Bleacher Area – Standing water from roof leak

APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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. 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.

APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15 30 DECEMBER 2002)

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose
1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References
Related publications are listed below.
- a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
- b. AR 11-34 (The Army Respiratory Protection Program).
- c. AR 40-5 (Preventive Medicine).
- d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
- e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
- f. OSHA Technical Manual, Edition VII.
- g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 5th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/Items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ (**PREFERRED METHOD**)- Pre moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

(c) Eleven (11) centimeter (cm) diameter Whatman ™ #10 paper.

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(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (If necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco. Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-3381IM

APPENDIX E (Continued)

800-247-6628
800-359-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472

[redacted]

E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From	Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75 \text{ ug}}{100 \text{ cm}^2} \quad \frac{929 \text{ cm}^2}{1 \text{ sq ft}}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 \text{ug/sq ft}$$

ug – Microgram

Cm2 -- Centimeters squared

Sq ft -- Square foot

APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address			Point of Contact *(name & phone #)* Samples Collected By
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation		Date Collected	Date Shipped
Analysis Desired			

Sampling Data

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	___ Persons Exposed	___ Hrs/Day	Method of Collection
Analysis Desired			
Sampling Data			

Sample No.								
Pump No.								B
Time On								L
Time Off								A
Total Time (min)								N
Flow Rate (LPM)								K
Volume (liters)								
GA/BZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer
Comments to Lab:		

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

COMPLIANCE MANAGEMENT INTERNATIONAL

1215 Manor Drive, Suite 205
Mechanicsburg, PA 17055
Phone: 717.590.7031
Fax: 717.590.7936
www.complianceplace.com

Industrial Hygiene Survey Report

National Guard Facility
Morristown Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Morristown Readiness Center** **430 Western Avenue** **Morristown, NJ, 07960**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**March 19, 2013**
Report Date:	**April 23, 2013**

Manager, Industrial Hygiene Services

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on March 19, 2013, at the Morristown Readiness Center located at 430 Western Avenue, Morristown NJ 07960. The survey was performed by Mr. Non-Responsive.

1. Lead surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in eight locations. See Section 3.0 for sampling results.

2. Lighting levels did not meet the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in two locations. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. The relative humidity level was below the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in all locations.

    b. Temperature levels were above the ASHRAE recommended guideline of 68-79 degrees F in four areas.

    c. Carbon dioxide levels exceeded the recommended ceiling of 1,005 ppm in one area.

    See Section 5.0 for detailed sampling results

4. Water-stained ceiling tiles were observed in the facility. All sources of water infiltration should be identified and repaired. Water stained ceiling tile should be removed and replaced.

Section 2.0 Operation Description & Observations

The Morristown Readiness Center is mainly an administrative facility with a drill hall, offices, classrooms, and a converted firing range area. There were approximately 10 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1930s and is in fair condition. It is a two-story structure. The exterior is brick. The interior walls are brick, concrete block, and drywall in some of the offices. The floors are concrete, carpet, and 9" x 9" and 12" x 12" floor tile. A new roof was installed about two years ago. The firing range was active until 1994, then was converted into a storage area. Lead was abated two years ago.

The heating system consists of a gas-fired steam furnace. Asbestos was abated in the boiler room 5 to 7 years ago. There are no A/C units.

A detached decommissioned FMS building exists on the property.

There is no child-care facility in the building.

Overall housekeeping practices were fair.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared properly designed. Personnel had supportive chairs.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Air ug/m^3	Surface ug/ft^2
1	Drill Hall	<5.4	*
2	SFC Non-Responsive s Office	<5.4	*
3	Blank	<3	*
4	Drill Hall Floor Center	*	<110
5	Drill Hall Electrical Box	*	**13000**
6	Drill Hall Structural Steel Beam	*	**520**
7	Converted Firing Range Floor	*	<110
8	Converted Firing Range Floor Outside Entrance	*****	**600**
9	Converted Firing Range Light Fixture	*****	<110
10	1st Floor Pepsi machine	*	**740**
11	1st Floor Amnesty Box	*****	**420**
12	1st Floor N Storage Floor	*	**480**
13	Recruiting Office Desk	*	<110
14	Lobby Display Case	*	**540**
15	Food Services Coke Machine	*	**1200**
16	Food Services Prep	*	<110
17	Office A-BTRY Desk	*	<110
18	Bar/Dining Room	*	110
19	2nd Floor Copy Center	*	<110
20	2nd Floor Corridor Floor	*	<110
21	CMDR Office Shelf	*	<110
-	**Criteria**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following locations:

  - Drill Hall – Electrical Box
  - Drill Hall – Structural Steel Beam
  - Converted Firing Range – Outside Entrance
  - 1^{st} Floor Amnesty Box
  - 1^{st} Floor Pepsi Machine
  - 1^{st} Floor N. Storage – Floor
  - Lobby – Display Case
  - Food Services – Coke Machine

  Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of 200 ug/ft^2.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
HHB Supply Bulk	33.1	10	Yes
HHB Training (Bulk Storage)	47.8	10	Yes
Boiler Room	**10.3**	**30**	**No**
1st Floor S Corridor	7.0	5	Yes
Armorer's Supply Bulk	35.8	10	Yes
Women's Toilet	35.9	5	Yes
Men's Toilet	36.5	5	Yes
Lobby	28.1	10	Yes
Recruiting Office	33.2	30-50	Yes
1st Floor N Corridor	8.3	5	Yes
N Storage Bulk	29.1	10	Yes
2nd Floor N Corridor	10.4	5	Yes
CMDR Conference Meeting	48.1	30	Yes
CMDR Office	72.1	30-50	Yes
S-2 Office	91.0	30-50	Yes
SFC Non-Responsive s Office	37.5	30-50	Yes
Conference Meeting	30.3	30	Yes
Training Office	54.5	30-50	Yes
Cpt. Non-Respons s Office	74.4	30-50	Yes
SFC Non-Responsive s Office	40.3	30-50	Yes
MPT SFC Office	54.4	30-50	Yes
FAC Office	34.9	30-50	Yes
Break Room	33.0	10	Yes
G-Unit Conference Meeting	31.3	30	Yes
A BTRY Conference Meeting	**24.4**	**30**	**No**
Drill hall	26.3	10	Yes
Converted Firing Range/Bulk Storage	37.3	10	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guideline in the boiler room and A BTRY conference room. Lighting should be improved in these areas.

Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature and relative humidity ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (◦F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	44.6	37.5	305	2.1
HHB Supply	72.1	**24.2**	523	0.2
Recruiting Office	78.6	**25.4**	730	0.1
Admin Training Office	**83.1**	**17.2**	**1118**	0.1
MPT SFC Office	**82.8**	**17.5**	531	0.1
FAC	**86.0**	**17.6**	532	0.1
G-Unit Conference	**85.6**	**14.5**	516	0.1
Criteria	**68-79**	**30-60**	**<1,005**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements were above the recommended 68-79°F in the admin training office, MPT SFGC office, FAC, and G-Unit conference room. Relative humidity levels were below the recommended guidelines in all sampled areas. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction of outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level for this survey. For this survey, carbon dioxide levels exceeded the recommended ceiling of 1,005 ppm in the admin training office. Outdoor air ventilation should be increased in this area.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide.

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observation was noted:

    - Water-stained ceiling tiles were observed in the facility. All sources of water infiltration should be identified and repaired. Water stained ceiling tile should be removed and replaced.

Section 6.0 Suspect Asbestos Containing Building Materials

The following suspect asbestos containing material (ACM) was noted at the time of this survey:

1. Several areas have 9”x 9” suspect ACM floor tiles. The flooring was intact and not sampled.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	3/19/13	2.77 LPM
SKC Air Sampling Pump	647610	3/19/13	2.80 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

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:**	3KNJ IH Survey	**Chain Of Custody:**	515378
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Morristown	**Date Submitted:**	3/22/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	3/29/2013 **Report Date:** 3/29/2013

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
13046617	1	Flame	Air	554	N/A	5.4	ug/m³	<3	<5.4	ug/m³	
13046618	2	Flame	Air	560	N/A	5.4	ug/m³	<3	<5.4	ug/m³	
13046619	3	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
13046620	4	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13046621	5	Flame	Wipe	****	0.108	110	ug/ft²	1400	13000	ug/ft²	
13046622	6	Flame	Wipe	****	0.108	110	ug/ft²	56	520	ug/ft²	
13046623	7	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13046624	8	Flame	Wipe	****	0.108	110	ug/ft²	64	600	ug/ft²	
13046625	9	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13046626	10	Flame	Wipe	****	0.108	110	ug/ft²	80	740	ug/ft²	
13046627	11	Flame	Wipe	****	0.108	110	ug/ft²	45	420	ug/ft²	
13046628	12	Flame	Wipe	****	0.108	110	ug/ft²	52	480	ug/ft²	
13046629	13	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13046630	14	Flame	Wipe	****	0.108	110	ug/ft²	58	540	ug/ft²	
13046631	15	Flame	Wipe	****	0.108	110	ug/ft²	130	1200	ug/ft²	
13046632	16	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13046633	17	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13046634	18	Flame	Wipe	****	0.108	110	ug/ft²	12	110	ug/ft²	
13046635	19	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	

AMA Analytical Services, Inc.

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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:**	3KNJ IH Survey	**Chain Of Custody:**	515378
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Morristown	**Date Submitted:**	3/22/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	3/29/2013 **Report Date:** 3/29/2013

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
13046636	20	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13046637	21	Flame	Wipe	****	0.108	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

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.

Analys Non-Responsive

Technical Manager: Non-Responsive

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 This Number For Inquires) **515378**

Pg 1 of 2

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. 3KNJ IH Survey
2. Morristown
3. Job #: PO #: W912K6-09-A-0003
4. Contact Pers @ phone # (410) 942-0273
5. [redacted]

Non-Responsive 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:

TURNAROUND TIMES
☐ Immediate ☐ 3 Day
☒ Next Day ☐ 5 Day +
☐ 2 Day (CRM) Date Due: 3/29/13
☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Include COC/Field Data Sheets with Report
☒ Email: Non-Responsive compliancepiace.com
☐ 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 (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) 18 (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)

Lot 3/23/12 Exp 9/15

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ASBESTOS: TEM	PCM	PLM	METALS: LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
#2 SET	GLAT-Z OFF	3/19/13	554					X								
#1	DRILL HALL		560					X								
3	BLANK		—					X								
4	DRILL HALL FLOOR CTR			100cm²				X								
5	DRILL HALL ELECT BOX							X								
6	DRILL HALL STRUCT STEEL							X								
7	CFR FLOOR							X								
8	CFR FLOOR OUTENT							X								
9	CFR LIGHT FIXTURE							X								
10	1ST FLR PEPSI MACHINE							X								
11	1ST FLR AMNESTY BOX							X								
12	1ST FLR N STOP FLOOR							X								

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

Non-Responsive

LABORATORY
1. Date/Time RCVD: 3 / 20 / 13 @ 1500 Via: FEDEX By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 7945 0185 1425

OWI (410) 247-2024 159202 210 REV. 6.08

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CHAIN OF CUSTODY

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Mailing/Billing Information:
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4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. [illegible] 3KNJ
2. [illegible] morristown
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Shirley Chapman/Ken Forsythe @ phone # (410) 942-0273
5. [illegible]

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:

[illegible]
☐ Immediate ☐ 3 Day
☒ Next Day ☐ 5 Day +
☐ 2 Day Date Due:
☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Inclu[illegible] with Report
☒ [illegible] Non-Responsive complianceplace.com
☐ Fax: [illegible]us.army.mil
☐ Verba[illegible]us.army.mil

[illegible]
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) 18 (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)

Sampling 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
13	Recruiting OFFICE DESK	3/9/13		100cm²				✓								
14	Lobby Display Case							✓								
15	Food SRVS coke machine							✓								
16	Kitchen FRIG							✓								
17	OFFICE ARMY Desk							✓								
18	BAR VCR shelf							✓								
19	2ND FLOOR COPY CENTER shelf							✓								
20	2ND FLOOR HALL FLOOR							✓								
21	CMDR OFF shelf							✓								

Lot 3/23/13 EXP 9/15

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: BEST AVAILABLE COPY Date: / / Time: Initials:
4. Comments:

Appendix B. Photographs

Morristown Armory Front

SACM 9”x9” Floor Tiles

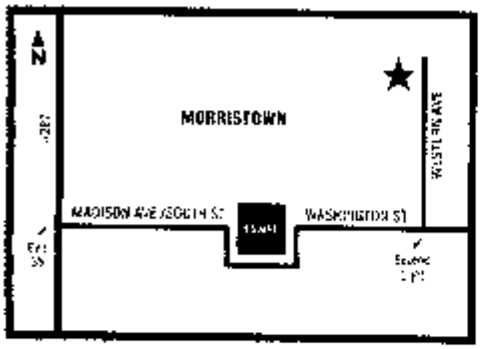
Water Stained Ceiling Tiles

Converted Firing Range

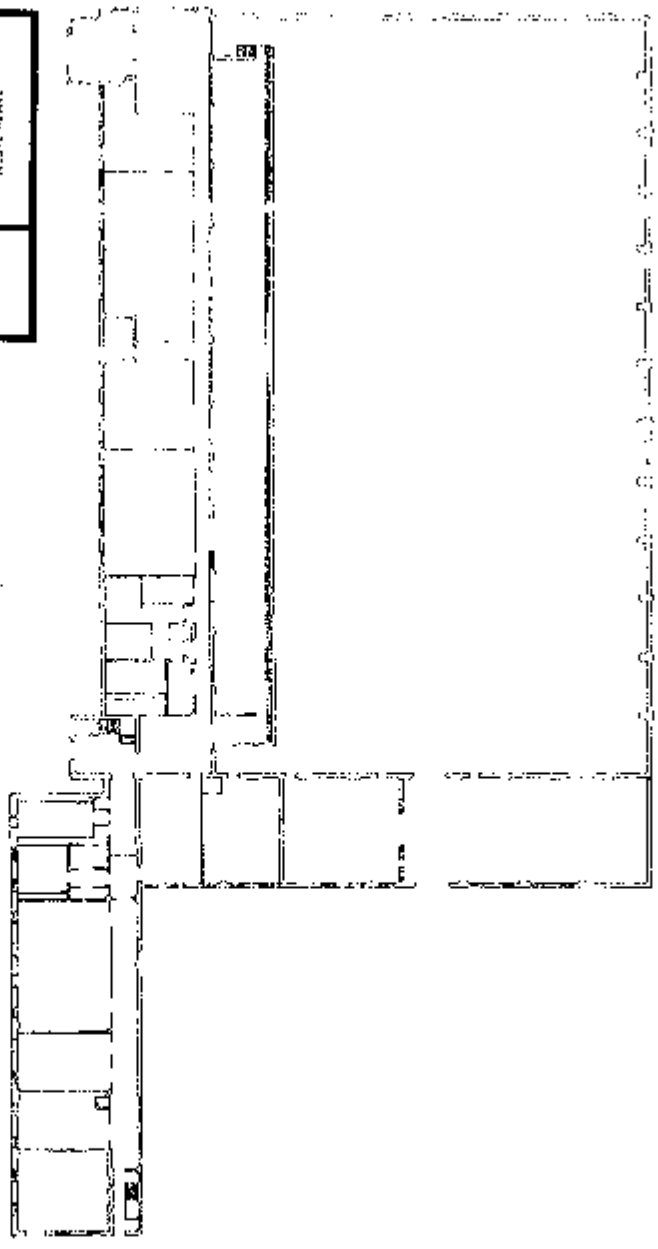
Appendix C. Floor Plan

Morristown Armory

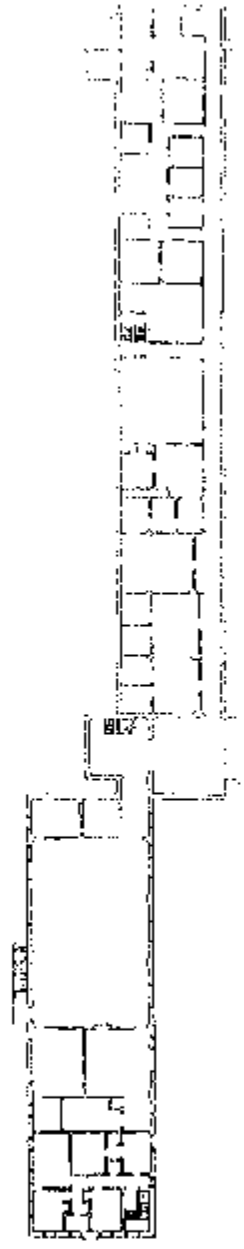
& Interactive Community Resource Center



Take South 287 to Exit 35 (Madison Ave.), stay to the right, go around square and make a right onto Washington St. Go to the second light (Western Ave.), make a left and the facility is aprox. 2 miles on the left.



First Floor Plan



Second Floor Plan

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

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

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

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h)(3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 NOV 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Jersey 03079

INDUSTRIAL HYGIENE SURVEY REPORT
NEWTON ARMORY
NEWTON, NEW JERSEY

Non-Responsive PhD, CIH
Office Manager

Non-Responsive
Project Manager

January 11, 2006
PN: 39741509

BEST AVAILABLE COPY

TABLE OF CONTENTS

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Computer workstations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3
Lighting		
On the day of the survey, the illumination in the XO's office and kitchen/ mess hall areas was inadequate in most circumstances.	Increase lighting in the administrative and kitchen areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4
Lead		
Suspect peeling lead-based paint was observed at the time of the inspection but could not be sampled due to height.	Sample peeling paint. If paint is determined to be lead-based then personnel trained in accordance with the OSHA Lead Standard should stabilize peeling lead paint (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 4
Lead was detected in wipe samples collected from the facility in amounts greater than 200 $\mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 4
Asbestos		
Three square feet of damaged boiler insulation was observed in the boiler room.	Repair or remove damaged asbestos-containing boiler insulation. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(2))	RAC 3

Findings	Recommendation	Risk Assessment Code
Asbestos		
No site-specific asbestos operations and maintenance plan available. No warning labels in janitorial or maintenance areas were posted.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3
Mold		
Water damage was observed in the Drill Hall. Mold growth could become an issue if left unattended.	Determine and repair source of water. Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4
Electrical Safety		
Hand trucks obstructed the electrical control panels located in the Electrical room	Electrical panels must be kept clear of obstructions for a minimum of 3 feet (OSHA 29 CFR 1910.303(g)(1)(i)).	RAC 4

1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Newton Armory located at Highway 206 in Newton, New Jersey 07860. This report includes an executive summary and a description of the site activities and findings and a list of conclusions and recommendations.

On March 26, 2004, Mr Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Newton, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Sergeant First Class Non-Responsive of the New Jersey ARNG was Mr. Non-Responsive site contact for this survey.

This armory is a one-story brick building, with an attached drill hall, that is constructed primarily of brick and mortar. This facility is built on a concrete slab. The building was constructed in 1957. A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer workstation chairs could not be adjusted for height, the armrests were in a fixed position and keyboards in offices could not be adjusted (Photo # 0036 and 0037). Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person. No complaints were received concerning workstations at the time of this survey.

Paints, thinners and other chemicals were located in the flammable lockers with hazard communication data.

Hand trucks obstructed the electrical control panels in the Electrical Room (Photo# 0034).

2.2 Chemical and Physical Agents Sampled

On the day of the survey, relative humidity, carbon dioxide and carbon monoxide measurements were made in the drill hall, orderly room, classroom 2, NCO Lounge, boiler room and outside. These readings were all measured using a TSI Q-Trak ™ (Model 8551). No indoor air quality complaints were received during this survey.

2.2.1 Relative Humidity

Relative humidity on the day of the survey ranged from 32.7 –56 % throughout the various building areas with an average of 46.7%. The average reading was below the recommended maximum of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from a low of 498 to a spike of 785 parts per million (ppm), with an average of 641 ppm. The outside reading was 329 ppm.

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the

concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-20004) recommends that levels of carbon dioxide be maintained below 700 ppm above the outside level. Given an outside level of 329 ppm on the day of the survey, the ASHRAE limit would be 1029 ppm.

2.2.3 Carbon Monoxide

Carbon monoxide concentrations ranged from 0 to 1.3 ppm on the day of the survey. ASHRAE (62.1-2004) recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments (62.1-2004). Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

2.2.4 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Locetion	Function	Measured Lighting (lux / foot candles)	Recommended Minimum Lighting (lux / foot candles)
Orderly Room	Office	850 / 80	500 / 50
Recruiter's Office	Office	829 / 77	500 / 50
Commander's Office	Office	1001 / 93	500 / 50
XO Office	Office	495 / 46	500 / 50
Classroom 1	Classroom	926 / 86	500 / 50
Classroom 2	Classroom	926 / 86	500 / 50
NCO's Office	Office	829 / 77	500 / 50
Computer Room	Server Room	721 / 67	500 /50
NCO Lounge	Lounge	183 / 17	300 / 30

On the day of the survey the illumination in the XO's Office and NCO lounge was inadequate.

2.2.5 Lead

A paint chip was collected from the Men's shower in the facility (Photo 0026), where peeling paint was observed. The lead level in the paint was 0.01% by weight which is less than the 0.5% level for "lead-containing" paint (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)).

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

GENERAL: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

ERGONOMICS: The ergonomic issues regarding desks, chairs and monitors should be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey the illumination in the administrative area was adequate in most offices. URS recommends increasing the area lighting or supplementing it with task lighting for each workstation in the XO's office. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

ELECTRICAL SAFETY: Electrical panels in the Electrical Room were obstructed by hand trucks. Electrical panels should be free from obstruction.

3.0 FORMER INDOOR FIRING RANGE

3.1 Operation Description

The indoor firing range has been dismantled and this building area is now primarily used for storage.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using Ghost Wipes ™, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1
Levels of Lead Dust Found in the Former Firing Range

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Acceptable Surface Contamination Level ($\mu g/ft^2$)
Former Firing Range-Floor – at bullet trap	0326-01	0.108	780	200
Former Firing Range-Floor – Center	0326-02	0.108	640	200
Blank	0326-06	Blank	8.3 µg	N/A

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: Wipe samples collected from the former firing range for lead were found to be above allowable limits set by the National Guard Bureau. The former firing range should be decontaminated by personnel trained in accordance with OSHA lead standard (29 CFR1910.1025) . The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Guidelines for the clean-up and rehabilitation of indoor firing ranges are contained in Appendix H.

4.0 DRILL HALL

4.1 Operation Description

The drill hall is a 5,000 square foot area with about a 30-foot high ceiling used for assembling personnel and storing vehicles. The walls are constructed of cinder blocks with a concrete floor. At the time of the industrial hygiene survey children were using the armory.

A water leak in the southeast corner (Photo # 0019) has damaged the paint. The damaged paint was inaccessible at the time of the survey and must be presumed to be "lead-based".

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using Ghost Wipes™, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1
Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped	Result ($\mu g/ft^2$)	Maximum Acceptable Surface Contamination Level ($\mu g/ft^2$)
Drill Floor- Southwest	0326-03	0.108	43	200
Drill Floor- Center	0326-04	0.108	47	200
Drill Floor- Northeast	0326-05	0.108	43	200
Blank	0326-06	Blank	8.3 µg	N/A

Sample numbers and locations can be found on the site map in Appendix A.

4.2.2 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing pipe insulation (Photo # 0001) in this area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-

600/M4-82-020. EPA-600/R-93-116). Table 4-2 below presents the results of the sample analysis.

Table 4-2
Sample Results of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Drill Hall	Pipe Insulation	0326-18A	15 (10% chrysotile; 5% amosite)
Drill Hall	Pipe Insulation	0326-18B	15 (10% chrysotile; 5% amosite)
Drill Hall	Pipe Insulation	0326-18C	15 (10% chrysotile; 5% amosite)

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA Analytical Services, Inc. is contained in Appendix D. Mr. Frederick's asbestos inspector training certificate is provided in Appendix E.

Debris (Photo 0002) was evident below the damaged asbestos-containing pipe insulation. Mr. Frederick informed the site contact SGT Plowman that the debris on the floor may contain asbestos.

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: Wipe samples collected from the drill hall for lead were found to be below the 200 microgram per square foot limit set by the National Guard Bureau. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

Peeling paint in the southeast corner could not be tested for lead content (inaccessible due to height). The paint should be tested and the peeling paint should be stabilized by

personnel trained in accordance with the OSHA lead standard (29 CFR 1910.1025) if appropriate.

ASBESTOS: Damaged asbestos-containing pipe insulation in the drill hall should be removed or repaired by an asbestos abatement contractor in accordance with applicable state and federal regulations.

MOLD: A water leak in the southeast corner of the drill hall may potentially be a source for mold growth if left untreated. URS recommends that the source of the water be determined (probably a roof leak) and repaired.

5.0 BOILER ROOM

5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

5.2 Chemical and Physical Agents Sampled

5.2.1 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) by Mr. Eric Frederick for a determination of asbestos content. These materials included damaged breeching insulation. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020. EPA-600/R-93-116

Table 5-1
Sample Results of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Boiler Room	Breeching Insulation	0326-17A	15 (chrysotile)
Boiler Room	Breeching Insulation	0326-17B	NAD
Boiler Room	Breeching Insulation	0326-17C	13 (5% chrysotile; 8% amosite)

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)).

Previously identified asbestos-containing pipe insulation and boiler insulation was observed in the boiler room and appeared to be in a damaged condition.

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

ASBESTOS: Asbestos-containing pipe insulation in the boiler room was observed to be in damaged condition (Photos # 0024 and 0025). URS recommends that this material be repaired and that debris on floor be cleaned by an asbestos abatement contractor following all applicable state and federal regulations.

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/IESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12, 22 Apr 96

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

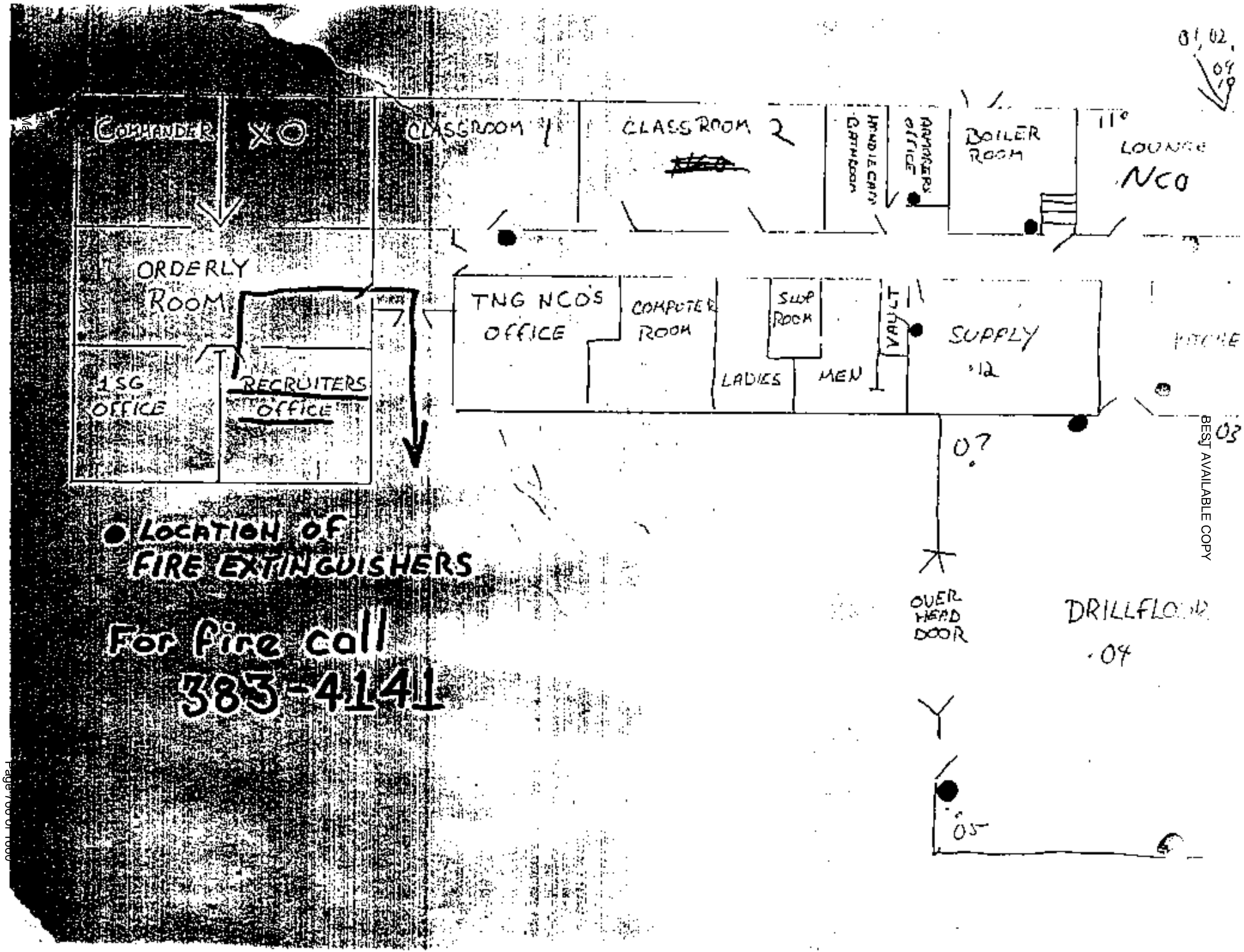
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

APPENDIX A

SHOP DRAWING



APPENDIX B

PERSONNEL LIST

PERSONEL LIST
NEWTON ARMORY

Name	Rank
Non-Responsive	SGT
	SGT
	SGT

APPENDIX C

HAZARDOUS MATERIALS LIST

PAINT CABINET INVENTORY

3 Gal	Exterior / Interior ENAMEL Alkyd Lusterless 5460
(1) 5 Gal	LATEX ENAMEL SEAL BROWN
(1) 5 Gal	LATEX ENAMEL medium BASE
1 QT	CLEAR ROLL-BRUSH ADHESIVE
1 CAN	BRASS METALLIC SPRAY PAINT
1 CAN	RED SPRAY ENAMEL
1 CAN	PRIMER COATING LT GRAY
1 CAN	TAN OBLITERATING COMPOUND
1 CAN	RUST OLEUM ENAMEL FLAT BLACK
1 CAN	FAST DRY SPRAY ENAMEL FLAT WHITE
1 CAN	HIGH HEAT SPRAY PAINT GRAY
1 CAN	FLAT BLACK ENAMEL
1 CAN	PENETRATING FLUID
1 Gal	RICH LUX LOW LUSTRE WHITE
2 Gal 5	RICH LUX LOW LUSTRE MEDIUM BASE
1 Gal	RICH LUX LOW LUSTRE BONE WHITE
4 Gal	CON LUX STEEL GUARD 8570 BRONZETONE
1 Gal	ARMSTRONG TILE ADHESIVE
6 Gal	MAB FLAME SHIELD CLEAR COATING
1 Gal	SEASHORE INTERIOR/EXTERIOR GLOSS ENAMEL WHITE
2 GAL	ACRYLIC LATEX EXTERIOR TRIM ENAMEL SEAL BROWN
1 GAL	ENAMEL ALKYD LUSTERLESS 7862
1 GAL	SEALING COMPOUND
1 GAL	LOW LUSTRE LATEX ENAMEL LEMON ICE
1 GAL	PAINT SATIN-PLEX LATEX SEAL BROWN
1 GAL	ALKYD LUSTERLESS BLACK

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128492
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Newton, NJ	**Date Analyzed:**	07/01/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	01-Jul-04
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
0449302	0326-01	Flame	Wipe	****	0.108	111.52	ug/ft²	780	ug/ft²	
0449303	0326-02	Flame	Wipe	****	0.108	111.52	ug/ft²	640	ug/ft²	
0449304	0326-03	Furnace	Wipe	****	0.108	34.85	ug/ft²	43	ug/ft²	
0449305	0326-04	Furnace	Wipe	****	0.108	34.85	ug/ft²	47	ug/ft²	
0449306	0326-05	Furnace	Wipe	****	0.108	34.85	ug/ft²	43	ug/ft²	
0449307	0326-06	Furnace	Wipe	****	0.108	2.79	ug/ft²	8.3	ug/ft²	
0449308	0326-15	Flame	Paint Chip	****	N/A	0.01	%Pb	< 0.01	%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 results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted]

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

NVLAP NY ELAP AIHA

CERTIFICATE OF ANALYSIS

Client: National Guard Bureau
Address: 301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation, Havre de Grace, Maryland 21078

Attention: [redacted]

Job Name: Armory
Job Location: Newton, NJ
Job Number: Not Provided
P.O. Number: BPA #W912K6-04-A0002

Chain Of Custody: 128492
Date Analyzed: 05/28/2004
Person Submitting: [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	Analyst ID	Comments
0449310	0326-17 A	15	15	--	--	--	25	--	--	--	--	60	Brown	CK	
0449311	0326-17 B	NAD	--	--	--	--	TR	--	2	--	--	98	Gray	CK	
0449312	0326-17 C	13	5	8	--	--	2	--	TR	--	--	85	Gray	CK	
0449313	0326-18 A	15	10	5	--	--	--	--	--	--	--	85	Off-White	CK	
0449314	0326-18 B	15	10	5	--	--	--	--	--	--	--	85	Off-White	CK	
0449315	0326-18 C	15	10	5	--	--	--	--	--	--	--	85	Off-White	CK	

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"

[redacted]

APPENDIX E

TRAINING CERTIFICATES

BEST AVAILABLE COPY

Certificate of Training

[redacted] Non-Responsive

For successful completion of an 8 Hour, 1 Day

Asbestos Inspector & Management Planner
Annual Refresher Training
MARCH 25, 2003

This training was approved and given in accordance with Regulations for Connecticut State Agencies RCSA 20-440 - 1-9 and RCSA 20-441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94

Presented by

Mystic Air Quality Consultants, Inc.
1204 North Road, Groton, CT 06340 (800) 247-7746

Certificate Number: IMPR10543 **Exam Grade: 100%** **Exam Date: 03/25/2004** **Expiration Date: 03/25/2004**

Christopher J. Eident, CIH, CSP, RS

George Williamson, Training Director

APPENDIX F

PHOTOGRAPHS

Photo 0001: Vehicle Storage (Drill Hall) - Damaged pipe insulation on heater

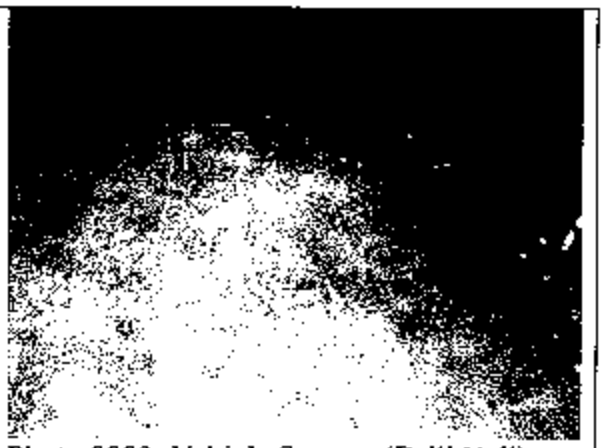


Photo 0002: Vehicle Storage (Drill Hall) – Debris located directly below the asbestos-containing pipe insulation

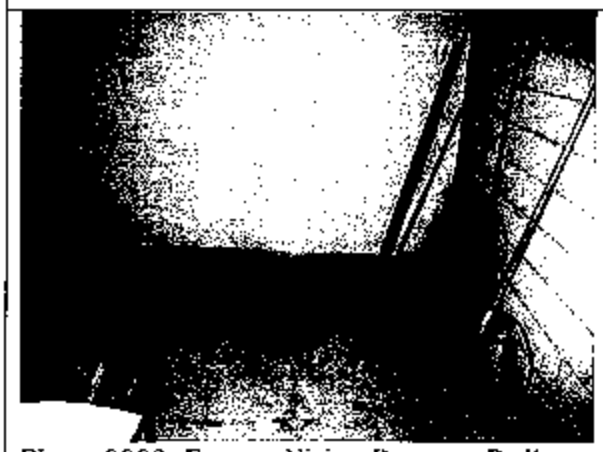


Photo 0009: Former Firing Range – Bullet trap wipe sample 0326-01

Photo 0010: Former Firing Range - Center floor wipe sample 0326-02

Photo 0013: Drill Hall – Wipe sample 0326-03

Photo 0014: Drill Hall – Wipe sample 0326-04

Photo 0015: Drill Hall – Wipe sample 0326-05

Photo 0019: Drill Floor Southeast corner water leak

Photo 0024: Boiler Room- Damaged asbestos-containing breeching and boiler insulation

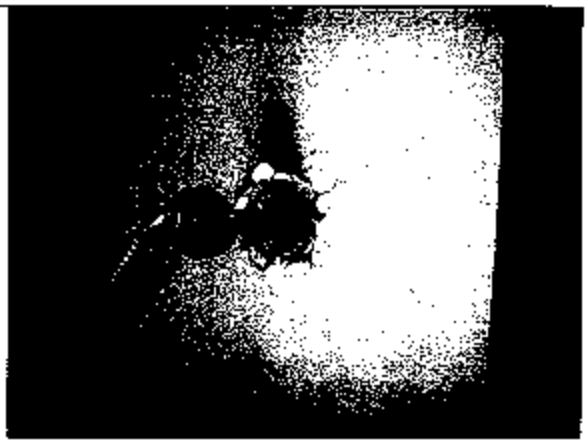


Photo 0025: Boiler Room - Damaged asbestos-containing boiler insulation

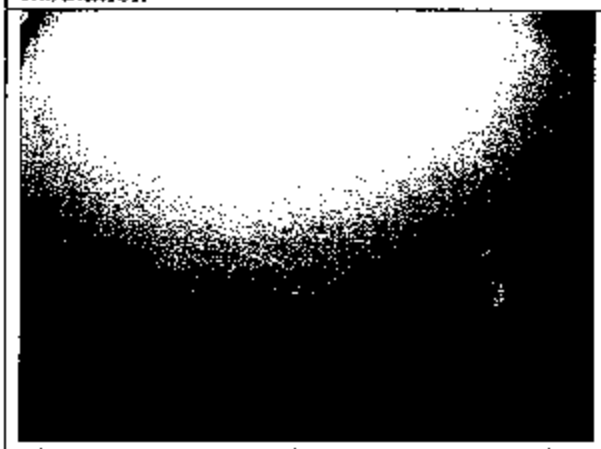


Photo 0026: Men's Shower Room Peeling paint

Photo 0034: Electrical Room – Obstructed electrical panels

Photo 0036: XO Office – Computer workstation

Photo 0037: Commander's Office - - Computer work station

APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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. 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.

APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose
1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References
Related publications are listed below.
a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
b. AR 11-34 (The Army Respiratory Protection Program).
c. AR 40-5 (Preventive Medicine).
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII.
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 5th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ **(PREFERRED METHOD)**- Pre molstened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

[redacted]

(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repealed for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX A
GENERAL PROCEOURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whalman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-3381M

APPENDIX E (Continued)

800-247-8628
800-358-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472

E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95021 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75 \text{ ug}}{100 \text{ cm}^2} \cdot \frac{929 \text{ cm}^2}{1 \text{ sq ft}}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 \text{ug/sq ft}$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft – Square foot

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet			
Return Address		Point of Contact *(name & phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation		Date Collected	Date Shipped
Analysis Desired			
Sampling Data			
Lab Use Only	Sample #	Results	Remarks
Comments to Lab:			

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	___ Persons Exposed	___ Hrs/Day	Method of Collection
Analysis Desired			
Sampling Data			

Sample No.								
Pump No.								B
Time On								L
Time Off								A
Total Time (min)								N
Flow Rate (LPM)								K
Volume (liters)								
GA/BZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer
Comments to Lab:		

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

INDUSTRIAL HYGIENE SURVEY REPORT
WASHINGTON ARMORY
550 STATE ROUTE 57
PORT MURRAY, NEW JERSEY

January 2006
PN: 39741508

Non-Responsive
Office Manager

Non-Responsive
Project Manager

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (Cont)

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Lighting		
On the day of the survey, the illuminance in the administrative area was inadequate in a majority of the offices.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected in the former firing range in amounts greater than 200 $\mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the drill hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
Asbestos		
Not applicable to this operation.	Update the asbestos operations and maintenance plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001(j))	RAC 3
Hazard Communication		
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
Mold		
Watermarks were observed on the ceiling tiles. Mold growth could become an issue if left unattended.	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4
Ergonomic		
Computer work stations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (DoD, OSHA General Duty)	RAC 3

1.0 SUMMARY

At the request of the National Guard Bureau Region North Industrial Hygiene Office (NGB), URS Corporation (URS) conducted an industrial hygiene survey at the Washington Armory located at 550 State Route 57 in Port Murray, New Jersey 07865. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On April 21, 2004, Ms. Non-Responsive an industrial hygienist with URS, conducted a site visit to the National Guard Armory located in Port Murray, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures.

An armory layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer workstation chairs and armrests were in a fixed position and keyboards could not be adjusted in several offices, including Room 155 (Photo # 11). Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Water marks on the ceiling in Room 10 (Photo # 7), Medic's Office (Photo # 9), Hall Outside Supply Room 3 (Photo # 10), and UMS – Room 161 (Photo # 16) may indicate the potential for mold growth.

2.2 Chemical and Physical Agents Sampled

2.2.1 Relative Humidity

Relative humidity levels were measured using a TSI Q-Track (Model 8551). The indoor relative humidity on the day of the survey ranged from 39% to 42%, with an average of 41%. This average reading was below the 65% relative humidity limit set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

2.2.2 Carbon Dioxide

On the day of the survey, carbon dioxide concentrations ranged from 837 parts per million (ppm) to 892 ppm, with an average of 865 ppm. Exterior carbon dioxide was measured at 513 ppm. Carbon dioxide levels were measured using a direct reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health

effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. Given an exterior level of 513 ppm on the day of the survey, the ASHRAE limit would be 1213 ppm.

2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Armory. The carbon monoxide concentration remained at 0 parts per million (ppm) throughout the survey period. This measured level was below the ASHRAE guideline (62.1-2004) for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

2.2.4 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI /IESNA RP–1-04)

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Illuminance (lux / foot candles)
Recruiter's Office	Administrative Duties	368 / 34.2	500 / 50
Room 155	Administrative Duties	432 / 40.1	500 / 50
Military and Vet Affairs main office	Administrative Duties	362 / 33.6	500 / 50
Military and Vet Affairs Office A	Administrative Duties	730 / 67.8	500 / 50
Military and Vet Affairs Office B	Administrative Duties	737 / 68.5	500 / 50
Military and Vet Affairs Office C	Administrative Duties	978 / 90.9	500 / 50
Old Classrooms 110/111	Administrative Duties	629 / 58.4	500 / 50
Room 112 – Club	Meeting Room	112 / 10.4	500 / 50
Maintenance Rom 114	Supply Area	279 / 25.9	300 / 30
Armorer's Office	Administrative Duties	574 / 53.3	500 / 50
Kitchen Room 118	Kitchen	205 / 19.0	500 / 50
Room 120/121 – Food Storage	Supply Area	336 / 31.2	300 / 30
UMS Room 161	Administrative Duties	694 / 64.5	500 / 50
UMS Room 163	Administrative Duties	361 / 33.5	500 / 50
Room 126 Medics	Administrative Duties	708 / 65.8	500 / 50
Room 132 - Supply Room 3	Supply Area	331 / 30.7	300 / 30
Family Support Supply Area	Supply Area	116 / 10.8	300 / 30
Family Support Office	Administrative Duties	406 / 37.7	500 / 50
Room 140 Supply	Supply Area	219 / 20.3	300 / 30
Office 145	Administrative Duties	460 / 42.7	500 / 50
Office 146	Administrative Duties	423 / 39.3	500 / 50
Room 206 Computer Training Room	Learning Center	541 / 50.2	500 / 50
Room 207 Gym	Fitness Center	174 / 16.2	300 / 30
Plans and Operations Conference/Training Room	Administrative Duties	120 / 11.1	500 / 50
Room 208 – S1	Administrative Duties	288 / 26.8	500 / 50
MPT Office	Administrative Duties	227 / 21.1	500 / 50
Office - S4	Administrative Duties	131 / 12.2	500 / 50
CSM Office	Administrative Duties	206 / 19.1	500 / 50

Table 2-1 (Cont)
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Illuminance (lux / foot candles)
Training/Conference Room	Administrative Duties	491 / 45.6	500 / 50
Office – OTRS/TT	Administrative Duties	260 / 24.2	500 / 50
Office – S3	Administrative Duties	206 / 19.1	500 / 50
Room 212 – Office	Administrative Duties	435 / 40.4	500 / 50
Room 201 – Office	Administrative Duties	463 / 43.0	500 / 50
Office 204	Administrative Duties	498 / 46.3	500 / 50

On the day of the survey the illuminance in the administrative area was inadequate in a few offices.

2.2.5 Lead

A paint chip sample was collected in one area where paint was peeling and sent to AMA Analytical Services, Inc. (AMA) for analysis. The sample was found to contain lead in a concentration below the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 2-2 below shows the results of the lead paint testing.

Table 2-2
Level of Lead in Paint Found in the Administrative Area

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Men's Shower Room	PC-01	0.01	<0.013

Wipe testing for lead dust was conducted in the administrative area using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 2-3 below shows the results of the lead sampling.

Table 2-3
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Acceptable Surface Contamination Level ($\mu g/ft^2$)
Office – S3 – Windowsill	WS-1	0.111	8.7	200
Room 212 – Bookcase	WS-2	0.111	29	200
Plans and Ops Room – Bookcase	WS-3	0.111	49	200
Medics Room 126	WS-4	0.111	160	200
Family Support Shelf	WS-5	0.111	57	200
Office 145 – Bookcase	WS-6	0.111	14	200
Recruiter's Office – Book shelf	WS-7	0.111	9.6	200
1st Floor Men's Room – Towel Dispenser	WS-8	0.111	4	200
Military and Vet Affairs Bookcase	WS-9	0.111	38	200
Room 116 – Shelf	WS-10	0.111	71	200
Food Storage – Shelf	WS-11	0.111	12	200
UMS – Shelf	WS-12	0.111	93	200
Office 201 – Bookcase	RWS-01	0.111	19	200
Room 206 – Cabinet	RWS-02	0.111	25	200
Room 140 Break room – Refrigerator	RWS-03	0.111	12	200
Room 110 – File Cabinet	RWS-04	0.111	40	200

Lead dust levels were found to be below the NGB recommended limit.

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

GENERAL: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

ERGONOMICS: The ergonomic issues with desks, chairs and monitors should be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey, the illuminance in the administrative area was inadequate in several offices. URS recommends increasing lighting in the few administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

LEAD: All wipe samples and the paint chip sample collected in the administrative area were found to contain lead dust levels below the maximum limit set by the National Guard Bureau.

MOLD: The water stains on the ceilings could lead to mold problems if not addressed.

3.0 FORMER FIRING RANGE

3.1 Operation Description

The firing range has been dismantled and this building area is now primarily used for training.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1
Levels of Lead Dust Found in the Former Firing Range

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Acceptable Surface Contamination Level ($\mu g/ft^2$)
Former Firing Range-Floor	FR-01	0.111	2800	200
Former Firing Range-Table	FR-02	0.111	22	200
Former Firing Range-Floor	FR-03	0.111	230	200
Former Firing Range-Floor	FR-04	0.111	2200	200
Former Firing Range-Floor	FR-05	0.111	1800	200

Levels of lead dust were found to exceed the maximum acceptable surface contamination level established by the NGB.

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: Four of the five surface wipe samples collected in the former firing range were found to contain lead dust levels above the recommended limit set by the National Guard Bureau. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Appendix contains guideline for the cleaning and

4.0 DRILL HALL

4.1 Operation Description

The drill hall is used for assembling personnel and storing equipment. The walls are constructed of cinder blocks with a concrete floor.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1
Level of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Drill Hall - Floor	RWS-05	0.111	51	200

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: The surface wipe sample collected in the drill hall was found to contain lead dust levels below the recommended limit set by the National Guard Bureau.

5.0 BOILER ROOM

5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and electrical equipment.

5.2 Chemical and Physical Agents Sampled

No chemical or physical agents were sampled in this area.

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

Not applicable to this operation.

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is be required for this site.

6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

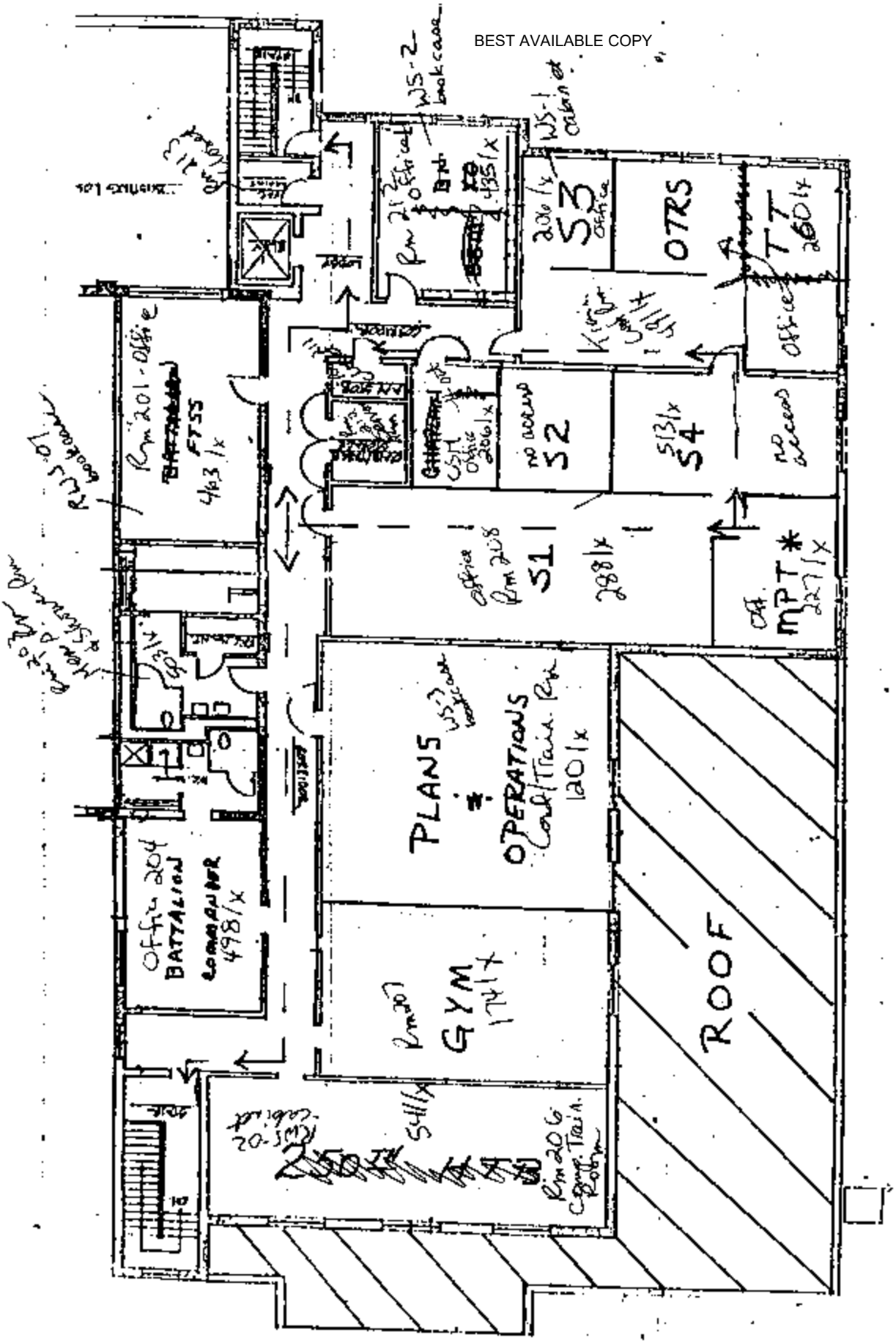
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

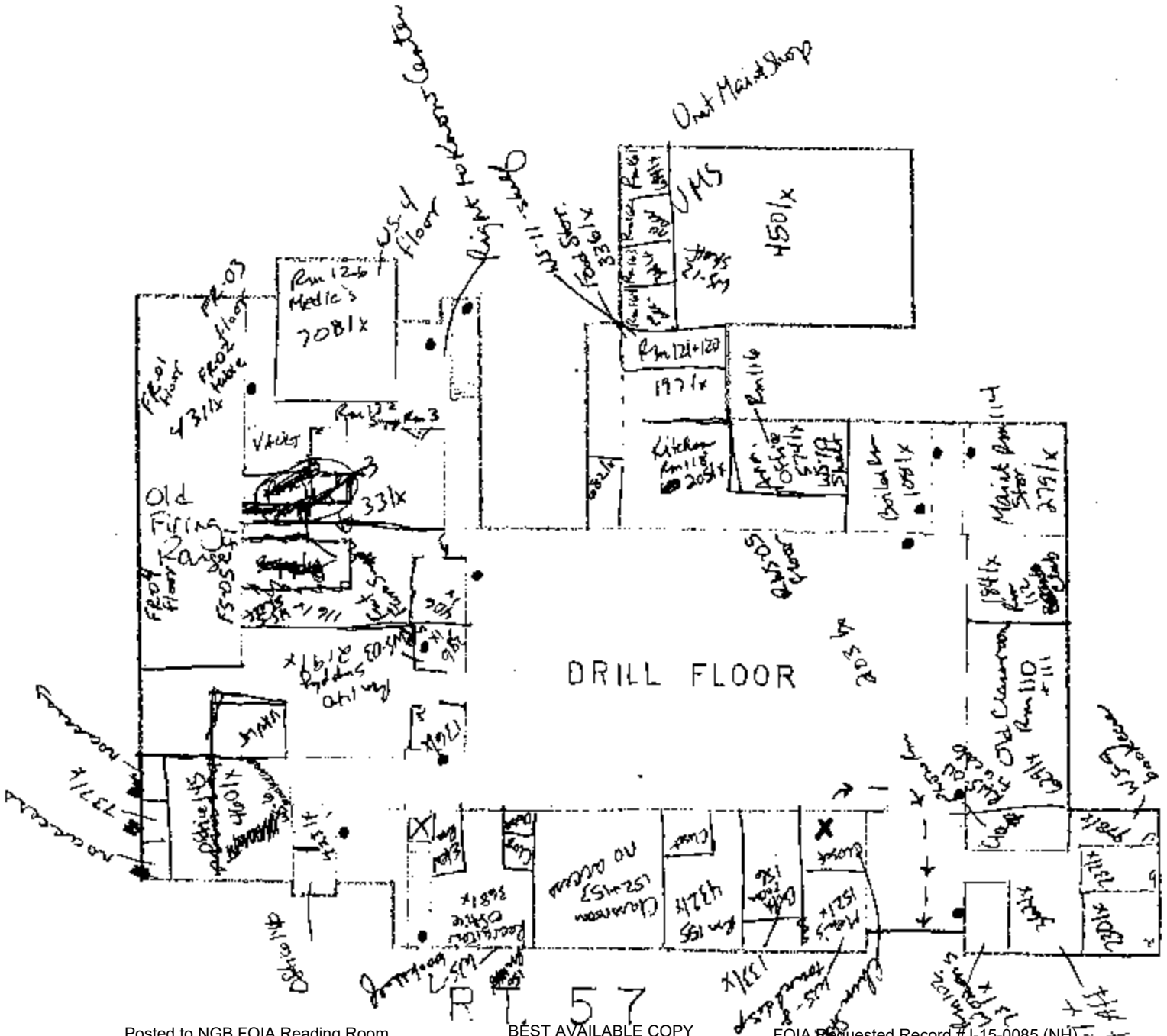
APPENDIX A

ARMORY DRAWING



FIRE EVACUATION ROUTES

1. YOU ARE HERE = X
2. ROUTE TO NEAREST EXIT = → – → – →
3. FIRE EXTINGUISHERS LOCATIONS = ●



APPENDIX B

PERSONNEL LIST

HQ/HHC FULL TIME UNIT SUPPORT CONTACT ROSTER

APPENDIX C

HAZARDOUS MATERIALS LIST

NOT PROVIDED

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

NVLAP
NY ELAP
AIHA

CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128466
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Washington	**Date Analyzed:**	6/25/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	25-Jun-04
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
0448837	WS-2	Furnace	Wipe	****	0.111	13.50	ug/ft²	29	ug/ft²	
0448838	WS-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.7	ug/ft²	
0448839	WS-3	Furnace	Wipe	****	0.111	33.75	ug/ft²	49	ug/ft²	
0448840	WS-4	Furnace	Wipe	****	0.111	33.75	ug/ft²	160	ug/ft²	
0448841	WS-5	Furnace	Wipe	****	0.111	33.75	ug/ft²	57	ug/ft²	
0448842	WS-6	Furnace	Wipe	****	0.111	13.50	ug/ft²	14	ug/ft²	
0448843	WS-7	Furnace	Wipe	****	0.111	2.70	ug/ft²	9.6	ug/ft²	
0448844	WS-8	Furnace	Wipe	****	0.111	2.70	ug/ft²	4	ug/ft²	
0448845	WS-9	Furnace	Wipe	****	0.111	13.50	ug/ft²	38	ug/ft²	
0448846	WS-10	Furnace	Wipe	****	0.111	33.75	ug/ft²	71	ug/ft²	
0448847	WS-11	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0448848	WS-12	Furnace	Wipe	****	0.111	33.75	ug/ft²	93	ug/ft²	
0448849	RWS-01	Furnace	Wipe	****	0.111	2.70	ug/ft²	19	ug/ft²	
0448850	RWS-02	Furnace	Wipe	****	0.111	2.70	ug/ft²	25	ug/ft²	
0448851	RWS-03	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0448852	RWS-04	Furnace	Wipe	****	0.111	13.50	ug/ft²	40	ug/ft²	
0448853	RWS-05	Furnace	Wipe	****	0.111	13.50	ug/ft²	51	ug/ft²	
0448854	FR-01	Flame	Wipe	****	0.111	108.01	ug/ft²	2800	ug/ft²	
0448855	FR-02	Furnace	Wipe	****	0.111	2.70	ug/ft²	22	ug/ft²	
0448856	FR-03	Furnace	Wipe	****	0.111	67.51	ug/ft²	230	ug/ft²	

...is 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, ...s 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 ...es. 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 ...bility 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, NIST, or any agency of the Federal Government.

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AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128466
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Washington	**Date Analyzed:**	6/25/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	25-Jun-04

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
0448857	FR-04	Flame	Wipe	****	0.111	108.01	ug/ft²		2200	ug/ft²	
0448858	FR-05	Flame	Wipe	****	0.111	108.01	ug/ft²		1800	ug/ft²	
0448859	PC-01	Flame	Paint Chip	****	N/A	0.01	%Pb	<	0.013	%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 results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] Technical Manager: [redacted]

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128466
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Washington	**Date Analyzed:**	6/4/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	04-Jun-04
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
0448859	PC-01	Flame	Paint Chip	****	N/A	0.01 %Pb	< 0.013 %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 results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] Technical Manager: [redacted]

BEST AVAILABLE COPY

APPENDIX E

TRAINING CERTIFICATES

Certificate of Training

[redacted] Non-Responsive

For successful completion of a 4 Hour, 1/2 Day

Asbestos Building Inspector
Annual Refresher Training
DECEMBER 5, 2003

This training was approved and given in accordance with the Regulations for Connecticut State Agencies RCSA 20 - 440 - 1-9 and RCSA 20 - 441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94.

Presented by

Mystic Air Quality Consultants, Inc.
1204 North Road, Groton, CT 06340 (800) 247-7746

Certificate Number: ABIRF11392 **Exam Grade:** 87%
Exam Date: 12/05/2003
Expiration Date: 12/05/2004

[redacted] Non-Responsive
H, CSP, RS

[redacted] Non-Responsive
Training Director

APPENDIX F

PHOTOGRAPHS

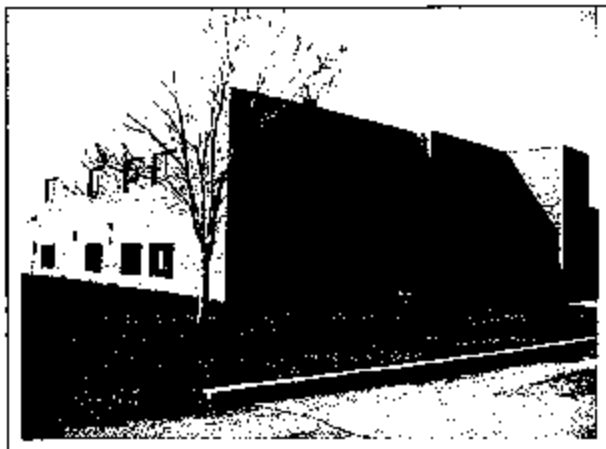


Photo 1: Exterior View

Photo 2: Exterior View

Photo 3: Right-To-Know Center (Incomplete)

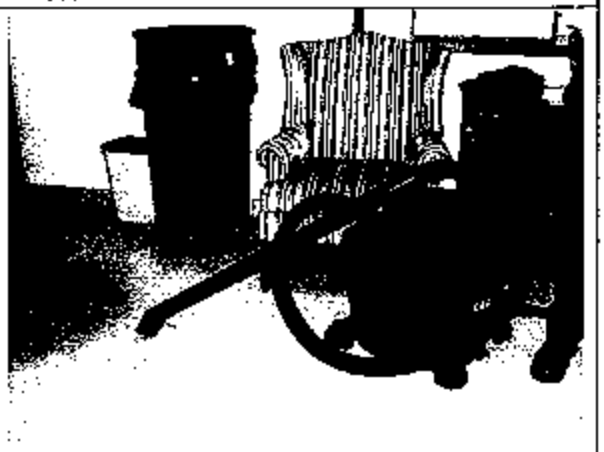


Photo 4: Office 201 – Water damage

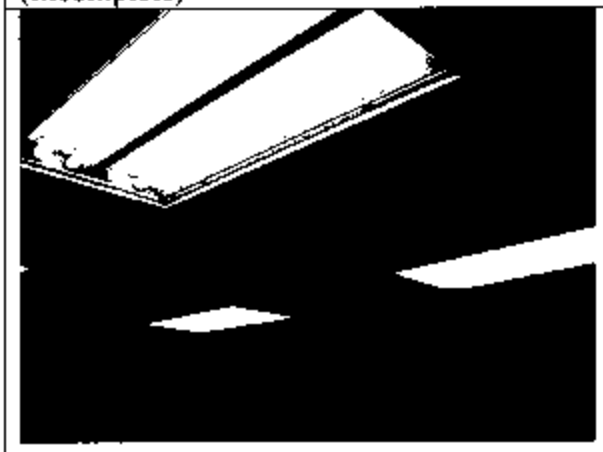


Photo 5: Office 201 – Water damage

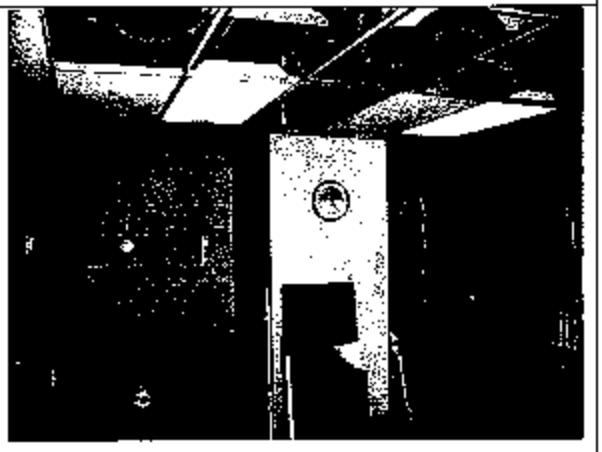


Photo 6: Office 201 - Water damage

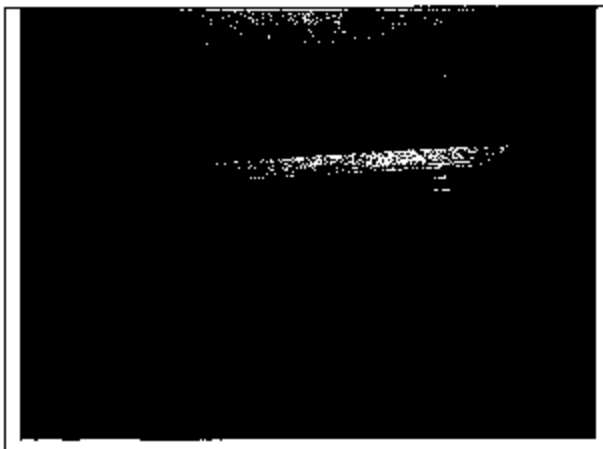


Photo 7: Room 210 Water damaged ceiling

Photo 8: Men's Shower – Peeling paint sample PC-01

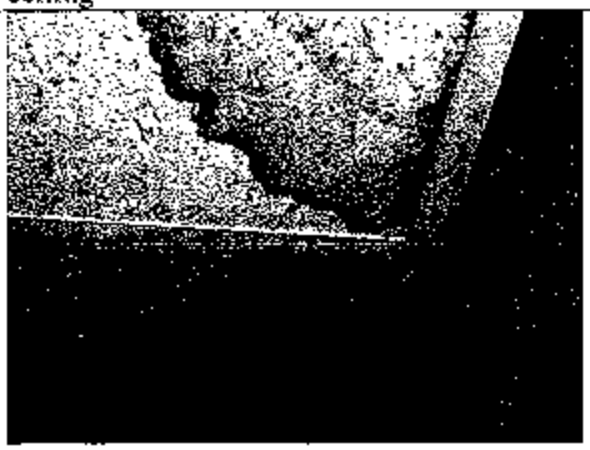


Photo 9: Medic's Office – Water damaged ceiling

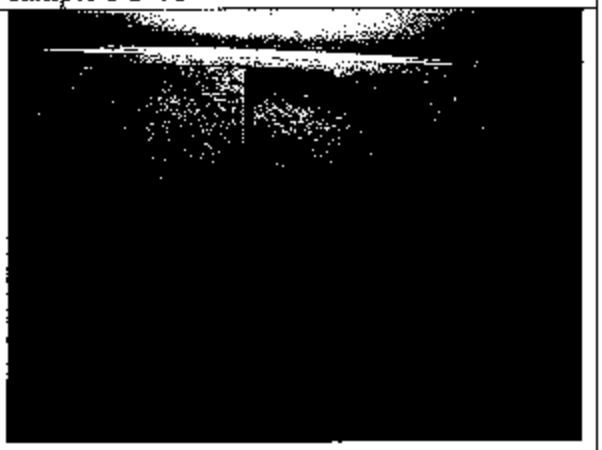


Photo 10: 1st Floor Hall Supply Room Water damaged ceiling

Photo 11: Office 155 – Computer work station

Photo 12: Closet Next to BR 156 – Improper chemical storage (unlabelled secondary containers)

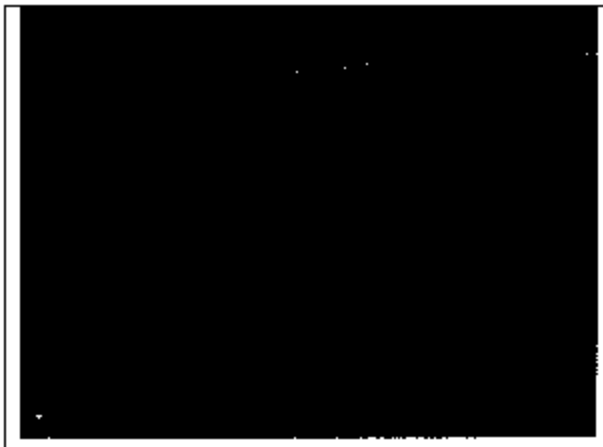


Photo 13: Drill Hall Water damaged ceiling

Photo 14: Boiler Room Electrical transformers

Photo 15: VMS Ventilation system

Photo 16: VMS Room 161 -- Water damaged ceiling

Photo 17: Exterior Heating Oil Tank

APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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 (□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 µg/ft²) and windowsills (250 µg/ft²) 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 □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 □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 avereged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

FINAL
INDUSTRIAL HYGIENE SURVEY REPORT
RIVERDALE ARMORY
107 NEWARK POMPTON TURNPIKE
RIVERDALE, NEW JERSEY

December 2005
PN: 39741508

Non-Responsive

Office Manager

Project Manager

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Lighting		
On the day of the survey, the illuminance in the administrative area was inadequate in more than half the offices.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected from a shelf in the HH Supply Storage Annex #2, from a cabinet in the Medic's Supply, and from the floor, a shelf, and the electrical cabinet in the former Firing Range in amounts greater than 200 $\mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the drill hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
Asbestos		
No site specific asbestos operations and maintenance plan available.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001(j))	RAC 3
Hazard Communication		
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
Mold		
Watermarks were observed on the ceiling tiles. Mold growth could become an issue if left unattended.	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4
Ergonomic		
Computer work stations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (DoD, OSHA General Duty)	RAC 3

1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Riverdale Armory located at 107 Newark Pompton Turnpike in Riverdale, New Jersey 07457. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On April 6, 2004, Ms. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Riverdale, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Mr. Non-Responsive was Ms. Non-Responsive site contact for this survey.

A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

2.0 ADMINISTRATIVE AREA

2.1 OPERATION DESCRIPTION

This area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer workstation chairs and armrests were in a fixed position and keyboards could not be adjusted in several offices, including those in the HHC Area and BN Area. Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Water marks on the ceiling in the 2nd Floor HHC Conference Area (Photo # 10) may indicate the potential for mold growth.

The Flammable Cabinet in the Storage Room next to the Men's room was obstructed (Photo # 3). Also in this location, there was a gasoline can stored outside of the cabinet (Photo # 4). There were improperly labeled chemicals and cleaning products in this location as well (Photos # 5 & # 6).

2.2 CHEMICAL AND PHYSICAL AGENTS SAMPLED

2.2.1 Relative Humidity

Relative humidity levels were measured using a TSI Q-Track (Model 8551). Relative humidity levels on the day of the survey ranged from 21% to 29% with an average of 25%. This average reading was below the recommended range of 30.0% to 60.0% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 55-2004).

2.2.2 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made at various locations throughout the Armory. Carbon dioxide concentrations ranged from 810 to 875 parts

per million (ppm), with an average of 843 ppm. Carbon dioxide levels were measured using a direct reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. The exterior carbon dioxide level was measured at 495 ppm on the day of the survey, the ASHRAE limit would be 1195 ppm.

2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Armory. The carbon monoxide concentration remained at 0 parts per million (ppm) throughout the survey period. This measured level was below the ASHRAE guideline for indoor environments (62.1-2004). Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion. ASHRAE (62.1-2004) recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

2.2.4 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI/IESNA RP--1-04 American National Standard Practice for Office Lighting)

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Illuminance (lux / foot candles)
Recruiting Office	Administrative Duties	749 / 69.6	500 / 50
Kitchen / Day Room	Kitchen	279 / 25.9	500 / 50
Armorer's Office	Administrative Duties	368 / 34.2	500 / 50
Classroom #3	Learning Center	480 / 44.6	500 / 50
Copy Room	Administrative Duties	384 / 35.7	500 / 50
Storage Room	Supply Area	497 / 46.2	300 / 30
Storage Next To Men's Room	Supply Area	139 / 12.9	300 / 30
Kitchen	Kitchen	442 / 41.1	500 / 50
Gym	Fitness Center	136 /12.6	300 / 30
Storage Outside Gym	Supply Area	145 / 13.5	300 / 30
HH Supply Storage Annex #2	Supply Area	177 / 16.4	300 / 30
Supply Room	Supply Area	453 / 42.1	300 / 30
Medics' Supply	Supply Area	180 / 16.7	300 / 30
HHC First Sergeant Office	Administrative Duties	553 / 51.4	500 / 50
HHC Office A	Administrative Duties	504 / 46.8	500 / 50
HHC Classroom	Learning Center	200 / 18.6	500 / 50
HHC Company Commander Office	Administrative Duties	636 / 59.1	500 / 50
HHC Office B	Administrative Duties	576 / 53.5	500 / 50
HHC Office C	Administrative Duties	440 / 40.9	500 / 50
HHC Office D	Administrative Duties	430 / 35.9	500 / 50
HHC Conference Area	Administrative Duties	488 / 45.3	500 / 50
HHC Copy Room	Administrative Duties	475 / 44.1	500 / 50
HHC Office E	Administrative Duties	858 / 79.7	500 / 50
Administration Office	Administrative Duties	737 / 68.5	500 / 50
2nd Floor Conference Room	Administrative Duties	256 / 23.8	500 / 50
BNXO Office	Administrative Duties	481 / 44.7	500 / 50
BNCDR Office	Administrative Duties	431 / 40.0	500 / 50
BNCSM Office	Administrative Duties	821 / 76.2	500 / 50
BN S-1 Office	Administrative Duties	618 / 57.4	500 / 50

Table 2-1 (Continued)
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Illuminance (lux / foot candles)
BN Conference Area	Administrative Duties	710 / 66.0	500 / 50
BN S-2 Office	Administrative Duties	305 / 28.3	500 / 50
BN S-3 Office	Administrative Duties	397 / 36.9	500 / 50
OPNS Office	Administrative Duties	475 / 44.1	500 / 50
BN S-4 Office	Administrative Duties	262 / 24.3	500 / 50

On the day of the survey the illuminance in the administrative area was inadequate in a few offices.

Wipe testing for lead dust was conducted in the administrative area using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 2-2 below shows the results of the lead sampling.

Table 2-2
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Acceptable Surface Contamination Level ($\mu g/ft^2$)
Classroom #3 – Floor	WS-01	0.111	28	200
Kitchen – Refrigerator	WS-03	0.111	190	200
BN CSM Office – Bookcase	WS-04	0.111	11	200
HHC 1st Sergeant Office – Table	WS-05	0.111	5.3	200
HHC Conference Area – Windowsill	WS-06	0.111	20	200
HH Supply Storage Annex #2 – Shelf	WS-07	0.111	320	200
Gym – Windowsill	WS-08	0.111	20	200
Armorer's Office	WS-09	0.111	23	200
Conference Room – AC Unit	WS-10	0.111	63	200
BNXO Office – Bookcase	WS-11	0.111	29	200

Table 2-2 (Cont)
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft2)	Result (µg/ft2)	Maximum Acceptable Surface Contamination Level (µg/ft2)
HHC Classroom – Windowsill	RWS-01	0.111	35	200
Medic's Supply – Cabinet	RWS-03	0.111	340	200
Hall Outside Copy Room – Floor	RWS-04	0.111	6.2	200
BN Conference Room – AC Unit	RWS-05	0.111	75	200

2.3 VENTILATION SYSTEM EVALUATION

Not applicable to this operation.

2.4 NOISE MEASUREMENTS

Not applicable to this operation.

2.5 PERSONAL PROTECTIVE EQUIPMENT

Not applicable to this operation.

2.6 INTERPRETATION OF RESULTS

GENERAL: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

ERGONOMICS: The ergonomic issues regarding desks, chairs and monitors need to be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey, the illuminance in the administrative area was inadequate in a several offices. URS recommends increasing lighting in those administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

LEAD: Two of the fourteen dust wipe samples were found to contain lead in quantities above 200 micrograms per square foot (See Appendix G). Personnel trained accordance with the OSHA lead standard (29 CFR 1910.1025, 29 CFR 1926.62) should clean these areas.

MOLD: The water stains on the ceilings could lead to mold problems if not addressed.

3.0 FORMER FIRING RANGE

3.1 OPERATION DESCRIPTION

The firing range has been dismantled and this building area is now primarily used for storage.

3.2 CHEMICAL AND PHYSICAL AGENTS SAMPLED

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1
Levels of Lead Dust Found in the Former Firing Range

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Acceptable Surface Contamination Level ($\mu g/ft^2$)
Former Firing Range-Ledge	FR-01	0.111	2200	200
Former Firing Range-Floor	FR-02	0.111	1100	200
Former Firing Range-Pallet	FR-03	0.111	17	200
Former Firing Range-Floor	FR-04	0.111	560	200
Former Firing Range-Electrical Shelf	FR-05	0.111	980	200

The results of the wipe sampling found that, in most cases, the level of lead in dust exceeded the recommended level.

3.3 VENTILATION SYSTEM EVALUATION

Not applicable to this operation.

3.4 NOISE MEASUREMENTS

Not applicable to this operation.

3.5 PERSONAL PROTECTIVE EQUIPMENT

Not applicable to this operation.

3.6 INTERPRETATION OF RESULTS

LEAD: Four of the five surface wipe samples collected in the former firing range were found to contain lead dust levels above the maximum limit set by the National Guard Bureau (See Appendix F). The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Personnel trained accordance with the OSHA lead standard (29 CFR 1910.1025, 29 CFR 1926.62) should clean these areas. Guidance on the rehabilitation and cleaning of indoor firing ranges is provided in Appendix H.

4.0 DRILL HALL

4.1 OPERATION DESCRIPTION

The drill hall is constructed of cinder-block walls with a concrete floor and is used for assembling personnel and storing equipment.

4.2 CHEMICAL AND PHYSICAL AGENTS SAMPLED

4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1
Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Acceptable Surface Contamination Level ($\mu g/ft^2$)
Drill Hall – Vending Machine	WS-02	0.111	94	200
Drill Hall – Radiator	RWS-02	0.111	77	200

4.3 VENTILATION SYSTEM EVALUATION

Not applicable to this operation.

4.4 NOISE MEASUREMENTS

Not applicable to this operation.

4.5 PERSONAL PROTECTIVE EQUIPMENT

Not applicable to this operation.

4.6 INTERPRETATION OF RESULTS

LEAD: The wipe samples collected from the drill hall were found to contain lead in quantities below 200 micrograms per square foot (See Appendix G)

5.0 BOILER ROOM

5.1 OPERATION DESCRIPTION

The boiler room is located next to the kitchen and drill floor. There are two boilers and associated duct work in this location.

5.2 CHEMICAL AND PHYSICAL AGENTS SAMPLED

5.2.1 Asbestos

According to the Armorer and a drawing from an abatement specification dated March 22, 2002, approximately 220 square feet of asbestos-containing boiler insulation 160 square feet of asbestos-containing breeching insulation was removed. Additionally, 500 linear feet of asbestos-containing pipe insulation and associated pipe fittings were repaired.

5.3 VENTILATION SYSTEM EVALUATION

Not applicable to this operation.

5.4 NOISE MEASUREMENTS

Not applicable to this operation.

5.5 PERSONAL PROTECTIVE EQUIPMENT

Not applicable to this operation.

5.6 INTERPRETATION OF RESULTS

ASBESTOS: It is recommended that any additional damaged asbestos-containing insulation be removed or repaired by an appropriately trained technician.

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 CONFINED SPACES

No safety program was found regarding confined spaces. No training records were found on site. A confined space program is not required for this site.

6.2 HEARING CONSERVATION

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

6.3 RESPIRATORY PROTECTION

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

6.4 HAZARD COMMUNICATION

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

6.5 PERSONAL PROTECTIVE EQUIPMENT

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/IESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 55-2004: Thermal Environmental Conditions for Human Occupancy

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Army Corps of Engineers

Safety and Health Requirements Manual EM 385-1-1 November 2003

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities for Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

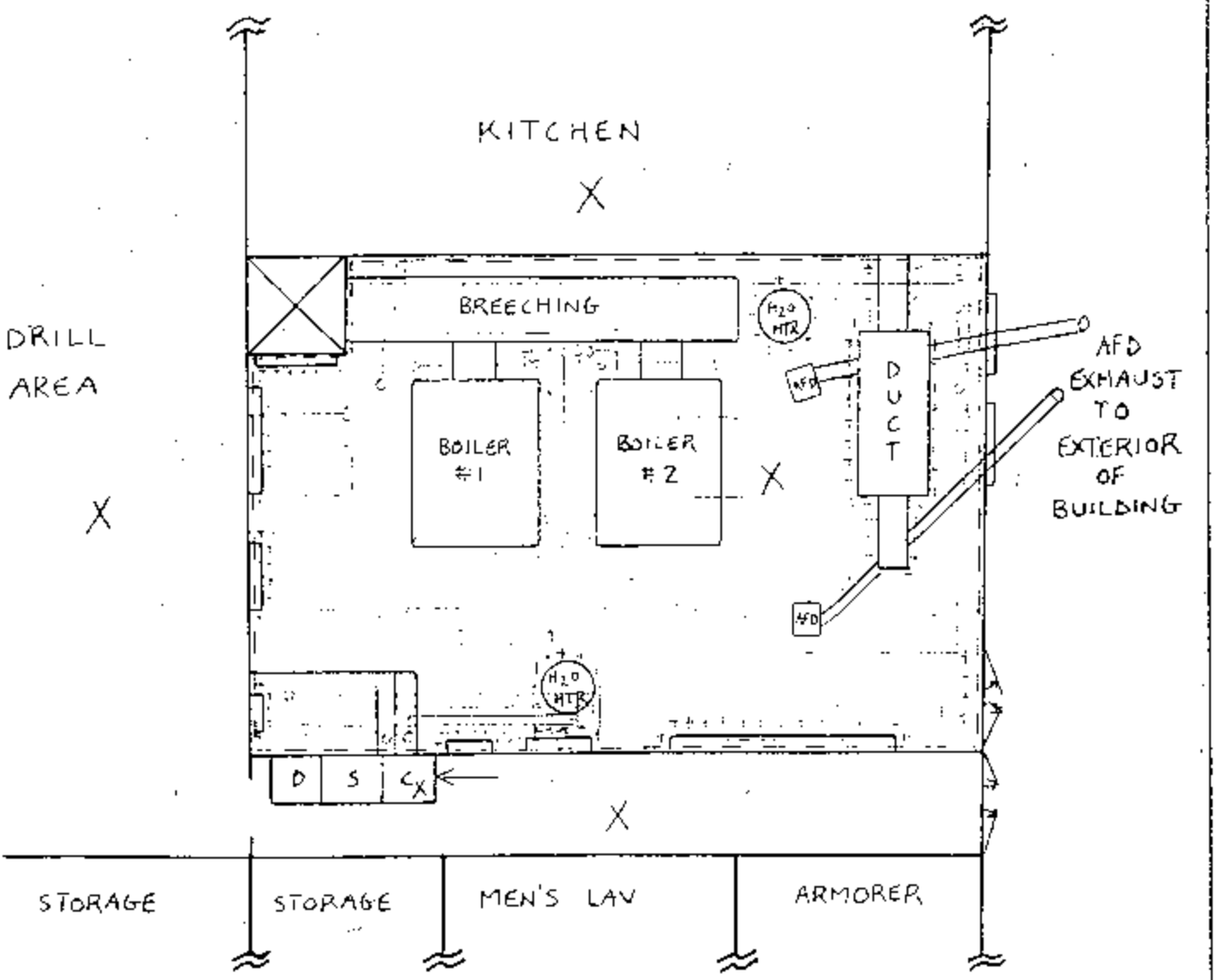
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

APPENDIX A

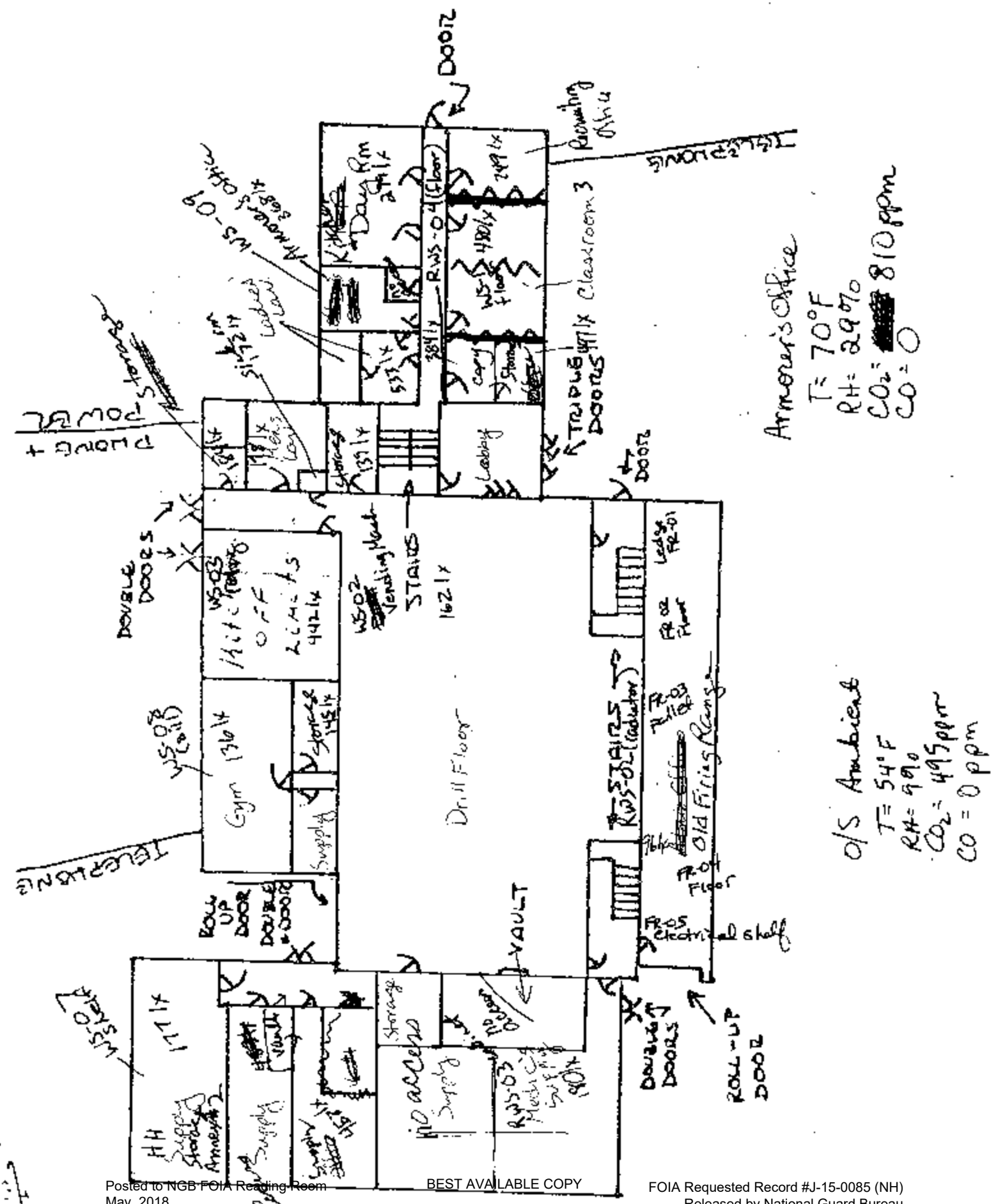
ARMORY DRAWING

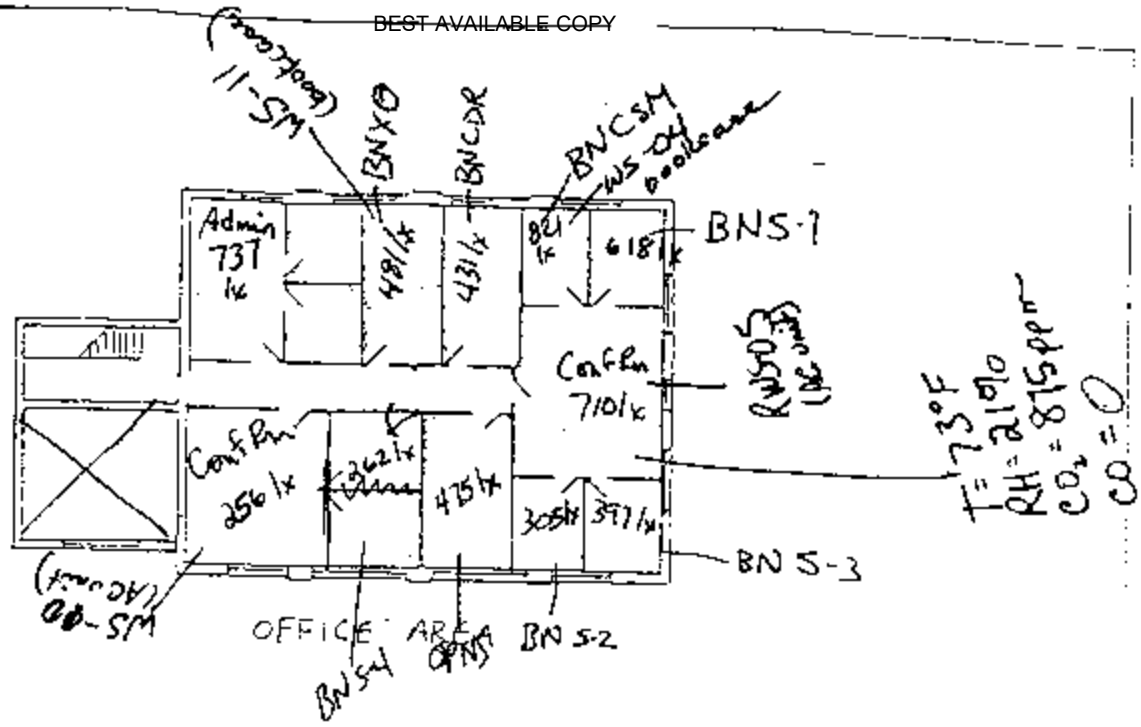


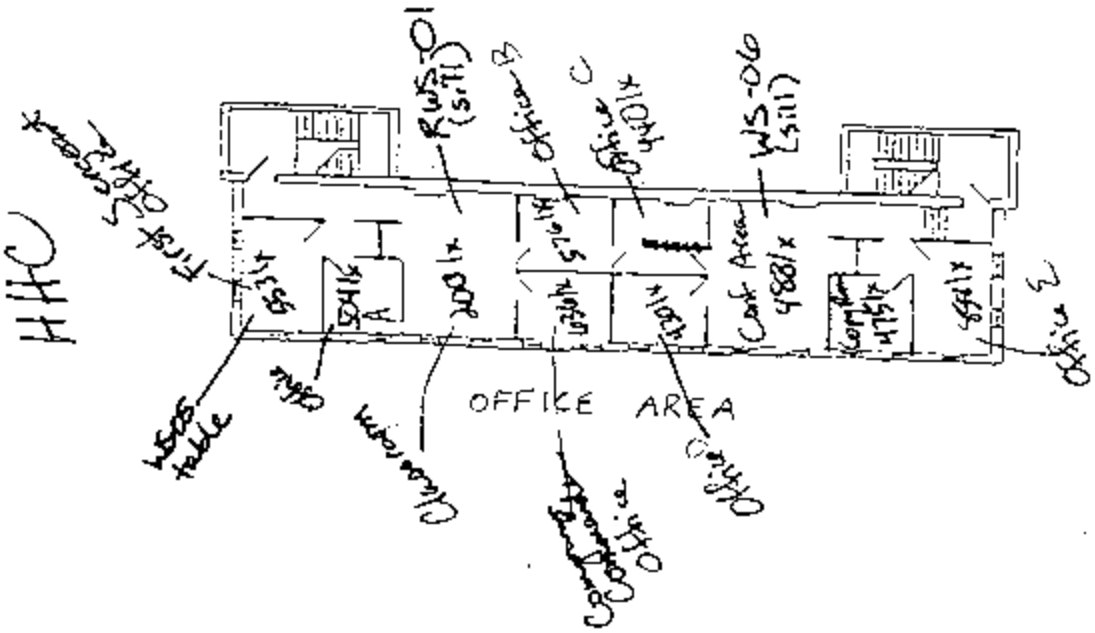
NOTE: REMOVE APPROXIMATELY 220 SF OF ASBESTOS CONTAINING BOILER INSULATION, 160 SF OF ASBESTOS CONTAINING BREECHING INSULATION AND REPAIR 500 LF OF ASBESTOS CONTAINING PIPE INSULATION AND ASSOCIATED PIPE FITTINGS VIA FULL CONTAINMENT PROCEDURES.

— CONTAINMENT
· CRITICAL BARRIER
— ACPT
[3] 3 STAGE DECON
AIR FILTRATION DEVICE
AIR SAMPLE LOCATION

DATE: 22 MAR 02	BOILER ROOM WORK AREA RIVERDALE ICRC RIVERDALE, NEW JERSEY
SCALE: NTS	
DRAWN BY:	AET Environmental, Inc. 501 KING AVE CHERRY HILL, NJ 08002
CHECKED BY:	







DATE: 22 MAR 02	SECOND FLOOR PLAN RIVERDALE ICRC RIVERDALE, NEW JERSEY
SCALE: NTS	
DRAWN BY: GJK	AET Environmental, Inc.
CHECKED BY:	501 KING AVE CHERRY HILL, NJ 08002

APPENDIX B

PERSONNEL LIST

NEW JERSEY ARMY NATIONAL GUARD
Headquarters 2nd Battalion (Mech) 113th Infantry
107 Newark Pompton Turnpike, Riverdale, New Jersey
07457

Last	First	Rank
[redacted]	Non-Responsive	MAJ
		CPT
		MSG
		SFC
		SFC
		SPC
		SSG
		SSG
		SSG
		MSG
		SFC
		MAJ
		LT

APPENDIX C

HAZARDOUS MATERIALS LIST

NOT PROVIDED

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

NVLAP
NY ELAP
AIHA

CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128470
Address:	301-1H Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Riverdale, NJ	**Date Analyzed:**	6/28/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	28-Jun-04

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
0448975	WS-01	Furnace	Wipe	****	0.111	13.50 ug/ft²	28 ug/ft²	
0448976	WS-02	Furnace	Wipe	****	0.111	33.75 ug/ft²	94 ug/ft²	
0448977	WS-03	Furnace	Wipe	****	0.111	67.51 ug/ft²	190 ug/ft²	
0448978	WS-04	Furnace	Wipe	****	0.111	2.70 ug/ft²	11 ug/ft²	
0448979	WS-05	Furnace	Wipe	****	0.111	2.70 ug/ft²	5.3 ug/ft²	
0448980	WS-06	Furnace	Wipe	****	0.111	2.70 ug/ft²	20 ug/ft²	
0448981	WS-07	Flame	Wipe	****	0.111	108.01 ug/ft²	320 ug/ft²	
0448982	WS-08	Furnace	Wipe	****	0.111	2.70 ug/ft²	20 ug/ft²	
0448983	WS-09	Furnace	Wipe	****	0.111	13.50 ug/ft²	23 ug/ft²	
0448984	WS-10	Furnace	Wipe	****	0.111	33.75 ug/ft²	63 ug/ft²	
0448985	WS-11	Furnace	Wipe	****	0.111	13.50 ug/ft²	29 ug/ft²	
0448986	RWS-01	Furnace	Wipe	****	0.111	13.50 ug/ft²	35 ug/ft²	
0448987	RWS-02	Furnace	Wipe	****	0.111	33.75 ug/ft²	77 ug/ft²	
0448988	RWS-03	Flame	Wipe	****	0.111	108.01 ug/ft²	340 ug/ft²	
0448989	RWS-04	Furnace	Wipe	****	0.111	2.70 ug/ft²	6.2 ug/ft²	
0448990	RWS-05	Furnace	Wipe	****	0.111	33.75 ug/ft²	75 ug/ft²	
0448991	FR-01	Flame	Wipe	****	0.111	108.01 ug/ft²	2200 ug/ft²	
0448992	FR-02	Flame	Wipe	****	0.111	108.01 ug/ft²	1100 ug/ft²	
0448993	FR-03	Furnace	Wipe	****	0.111	2.70 ug/ft²	17 ug/ft²	
0448994	FR-04	Flame	Wipe	****	0.111	108.01 ug/ft²	560 ug/ft²	

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, NIST, or any agency of the Federal Government.

An AIHA (#8863), NVLAP (# 101143), & New York 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
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128470
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Riverdale, NJ	**Date Analyzed:**	6/28/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	28-Jun-04

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
0448995	FR-05	Flame	Wipe	****	0.111	108.01 ug/ft²	980 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 results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted]

APPENDIX E

TRAINING CERTIFICATES

Certificate of Training

Awarded to

Non-Responsive

For successful completion of a 4 Hour, 1/2 Day

Asbestos Building Inspector

Annual Refresher Training

DECEMBER 5, 2003

This training was approved and given in accordance with the Regulations for Connecticut State Agencies RCSA 20 - 440 - 1-9 and RCSA 20 - 441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94.

Presented by

Mystic Air Quality Consultants, Inc.

1204 North Road, Groton, CT 06340 (800) 247-7746

Certificate Number: ABIRF11392 Exam Grade: 87% Exam Date: 12/05/2003 Expiration Date: 12/05/2004

Non-Responsive

CSP, RS

Non-Responsive

ng Director

APPENDIX F

PHOTOGRAPHS

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Riverdale Armory	39741508

Photo No.	Date:
1	4/6/04

Description:

9"x9" Brown Floor Tile Found Throughout

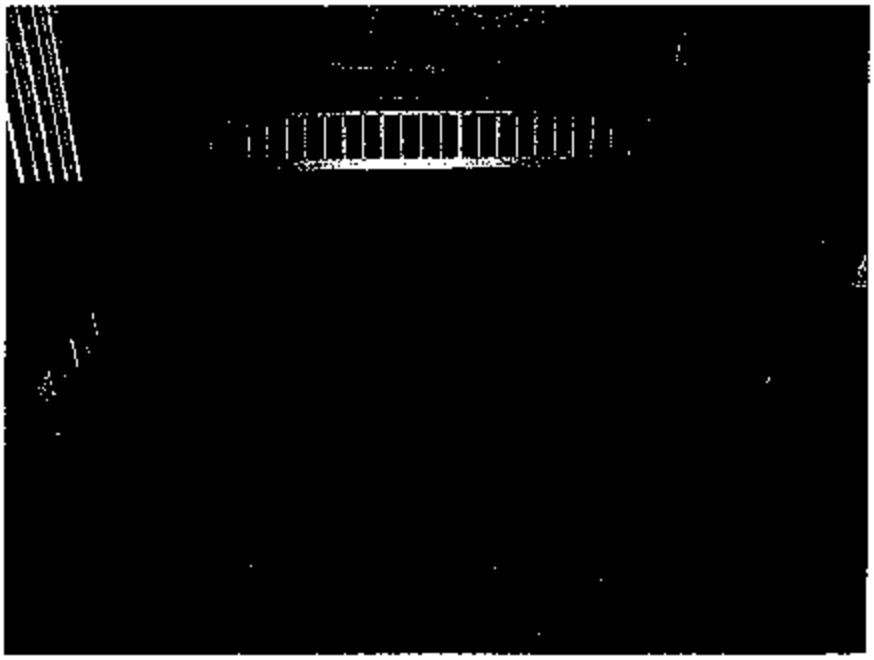
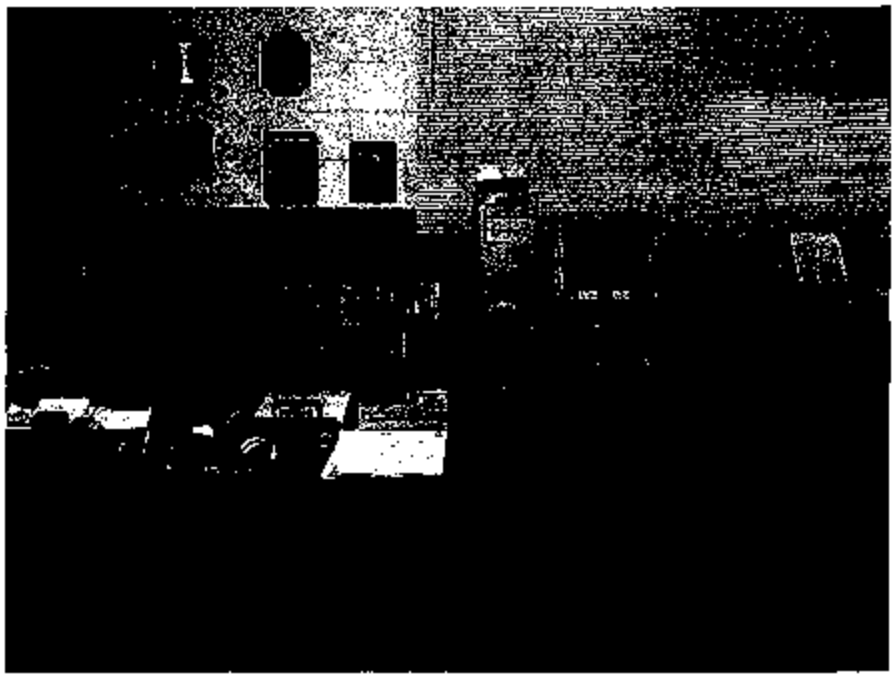


Photo No.	Date:
2	4/6/04

Description:

Recruiting Office – Desk Set-up



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Riverdale Armory	39741508

Photo No.	Date:
3	4/6/04

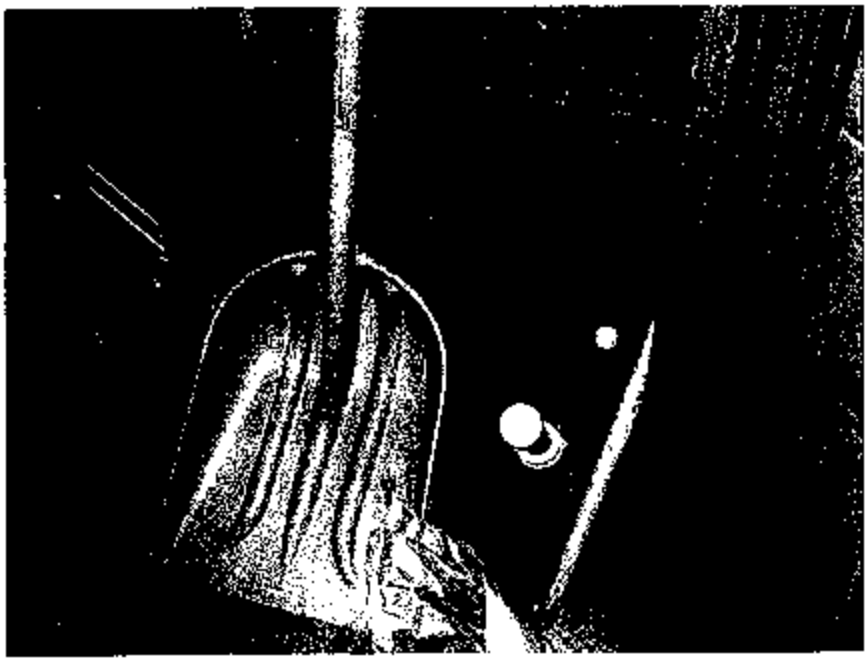
Description:

Flammable Cabinet

Photo No.	Date:
4	4/6/04

Description:

Gasoline Can



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Riverdale Armory	39741508

Photo No.	Date:
5	4/6/04

Description:

Unlabeled/Improperly Labeled Chemicals

Photo No.	Date:
6	4/6/04

Description:

Chemical Storage

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Riverdale Armory	39741508

Photo No.	Date:
7	4/6/04

Description:

Right to Know Center

Photo No.	Date:
8	4/6/04

Description:

Chemical Storage

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Riverdale Armory	39741508

Photo No.	Date:
9	4/6/04

Description:

Water Stained Ceiling Tiles

APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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. 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.

APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

DEPARTMENTS OF THE ARMY AND THE AIR FORCE
NATIONAL GUARD BUREAU
1411 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202-3231

NGB-AVS

5 December 2001

MEMORANDUM FOR THE ADJUTANTS GENERAL OF ALL STATES, PUERTO RICO, THE US VIRGIN ISLANDS, GUAM, AND THE COMMANDING GENERAL OF THE DISTRICT OF COLUMBIA

SUBJECT: (All States Log Number P01-0075) Army National Guard (ARNG) - Policy and Responsibilities for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges (IFR) and Guidelines for IFR Rehabilitation, Conversion and Cleaning

1. References:

a. AR 385-63, Policy and Procedures, 15 November 1983.

b. DODI 6055.9-STD, DOD Ammunition and Explosive Safety Standards, August 1997.

c. DODIG Report #98-170, subject: ARNG and U.S. Army Reserve Command Small Arms IFR, 30 June 1998.

d. AR 385-10, The Army Safety Program, 29 February 2000.

e. All States Memorandum, NGB-AVS, 18 September 2000, subject: (All States Log Number P00-0059) Army National Guard (ARNG) - Policy and Responsibilities for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges.

2. The policy and procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges are enclosed. Ouidelines for Rehabilitation, Conversion, and Cleaning of IFRs are provided in the Addendum. These policies apply to all persons responsible for the operation, rehabilitation, conversion, and cleaning of ARNG IFR and satisfy the requirements of the references listed above.

3. The enclosed document contains sample formats of the forms necessary for the routine operation of IFRs. Additionally, an IFR Standing Operating Procedure is provided to assist each State/Territory in developing local guidance consistent with the needs of the individuals that use their range(s).

4. The contents of this memorandum will be incorporated into the revision of NGR 385-15, Policy and Responsibilities for Evaluation, and Operation of ARNG Indoor Firing Ranges, and National Guard Pamphlet 385-15, Guidance and Procedures for IFR Rehabilitation, Conversion, and Cleaning.

NGB-AVS
SUBJECT: (All States Log Number P01-0075) Army National Guard (ARNG) - Policy and Responsibilities for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges (IFR) and Guidelines for IFR Rehabilitation, Conversion and Cleaning Inspection

5. This memorandum expires 30 November 2002, unless sooner rescinded or superseded.

6. Point of contact is Colonel Non-Responsive Chief, Aviation and Safety Division, at DSN 327-7700 or 703-607-7700.

FOR THE CHIEF, NATIONAL GUARD BUREAU:

Non-Responsive

Encl
as

Lieutenant General, GS
Director, Army National Guard

CF:
NGB-IG
NGB-ART
NGB-ARO
NGB-ARE
NGB-ARI
NGB-ARS
NGB-PL
NGB-ARZ-PC
Each State IG
Each State Safety Office
Each State Occupational Health Nurse
Each State Training Site Commander
Each State USPFO
Each Regional Industrial Hygienist

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

Safety

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

Contents — Paragraph

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

Appendices
Appendix A - Abbreviations
Appendix B - References
Appendix C - Indoor Firing Range Accident Response Plan
Appendix D - Permission and Release of Liability Certificate
Addendum
Guidelines and Procedures for IFR Rehabilitation, Conversion, and Cleaning

1-1. General
This policy prescribes Army National Guard (ARNG) policy and responsibilities for inspection, evaluation and operation of ARNG indoor firing ranges. It applies to all training, maintenance, and firing activities conducted on indoor firing ranges. This policy supplements AR 385-10, AR 385-63, and AR 385-64.

1-2. Explanation of abbreviations and terms
Abbreviations used in this publication are listed in Appendix A. Terms that apply specifically to IFRs can be found in paragraph 1-37 of this regulation.

1-3. Policy
a. Ammunition shall only be fired in properly classified indoor firing ranges.
b. Detailed initial and periodic inspections of all indoor firing ranges shall be conducted as prescribed to ensure compliance with current safety and health standards.
c. ARNG or civilian personnel shall not use any indoor firing range, which has been classified as unsafe.
d. A DA Form 4753, Notice of Unsafe or Unhealthy Working Condition, shall be posted on the entrance to all ranges classified as unsafe.
e. Ranges classified as unsafe shall be secured, sufficiently to preclude entry.
f. New ranges shall be designed using the latest standards provided by NGB-ARI.
g. The use of indoor firing ranges for purposes other than small arms weapons training and target practice is strictly *prohibited*.

Responsibilities

1-4. Director, Army National Guard (DARNG)
The Director, Army National Guard establishes policy and provides resources necessary to implement the ARNG Range Safety program per AR 385-63.

1-5. Chief, Aviation and Safety (NGB-AVS)
The Chief, NGB-AVS, has staff responsibility for supervising the ARNG Range Safety Program and to:
a. Identify the resources necessary to effect policy and standards throughout the ARNG in accordance with (IAW) AR 385-63.
b. Coordinate with other HQDA staff agencies and the Adjutants General on matters pertaining to the ARNG Range Safety Program.

1-6. Chief, Safety and Occupational Health Branch (NGB-AVS-S)
The Chief, NGB-AVS-S shall- -
a. Develop, implement, and manage the ARNG Range Safety Program.
b. Review the design of all ranges to be constructed or remodeled for compliance with safety and occupational health standards and make recommendations to appropriate approval authority.
c. Determine the classification of indoor firing ranges based upon input from the state safety manager, the ventilation measurements, and the air monitoring results (breathing zone and general area).

d. Conduct an initial evaluation of new IFRs and reevaluate every two years thereafter. An IFR will be reevaluated if modifications to the range structure or ventilation system are made. *Approval from the State Safety Office and Regional Industrial Hygienist must be obtained before the range is returned to service.*

f. Determine and publish the training requirements for the persons who will conduct range evaluations.

1-7. Chief, Training Division (NGB-ART)
The Chief, NGB-ART shall provide weapons training strategies consistent with AR 350-41 and the Standard and Training Commission.

1-8. Chief, Installations Division (NGB-ARI)
The Chief, NGB-ARI shall- -

a. Provide the design standards for the construction of indoor firing ranges.

b. Ensure that the designs for new and remodeled indoor firing ranges meet approved standards and are reviewed and approved by the Safety and Occupational Health Branch.

1-9. The State Adjutant General
The State Adjutant General shall- -

a. Establish, supervise, and direct a safety and occupational health program for users of indoor firing ranges.

b. Ensure all ranges being used are classified as "safe" or "limited use", those ranges classified as "limited use" under the criteria of this regulation are used on a limited basis, and all ranges classified as "unsafe" under the criteria of this regulation are not used.

c. Determine and identify funding requirements to ensure development of a comprehensive safety and occupational health program for the users of indoor firing ranges.

1-10. State Safety Manager
State Safety Managers shall--

a. Perform or coordinate performance of all inspections and evaluations of indoor firing ranges.

b. Determine whether the range is "safe" or "unsafe" based on the physical safety inspection.

c. Review and approve all indoor firing range SOPs to ensure all requirements are met. An example SOP can be found at Figure 1-3 of this regulation.

d. Perform design review of IFRs to ensure current safety and occupational health related compliance requirements are met.

e. Make recommendations to the Adjutant General regarding the disposition of "unsafe" and "limited use" ranges.

f. Approve the use of the range by non-military organizations.

g. Maintain copies of all range inspections, ventilation measurements and visitors log.

1-11. State Occupational Health Nurse
The Occupational Health Nurse shall- -

a. Schedule medical surveillance examinations for individuals who are or may be exposed to Lead above the action level for more than 30 days per year.

b. Maintain exposure monitoring (air sampling results) and medical surveillance records for 40 years or the duration of employment plus 20 years, whichever is longer, as prescribed in 29 CFR 1910.1025, Appendix C, Section I.

c. Record the worker's exposure data on DA Form 4700 (Medical Record-Supplemental Medical Data) overprints, IAW TB MED 503 paragraph 3-2 f (1)(a), and DODI 6055.5-M Occupational Health Surveillance Manual.

d. Institute a training program that identifies the hazards and preventive measures for all personnel with a potential for exposure to Lead.

1-12. State Environmental Office
The State Environmental Office shall coordinate disposal of all hazardous waste generated from range operation, cleaning, and maintenance.

1-13. Facility Commanders
Commanders of facilities with indoor firing ranges shall maintain and be familiar with AR 385-63, and the provisions of this regulation, to ensure that- -

a. A Safety and Occupational Health Compliance Program is developed as specified in this regulation.
b. Indoor firing ranges are secured when not in use.
c. A custodian is appointed for all indoor firing ranges under his/her area of command.
d. The custodians of the indoor firing ranges maintain the visitors log and follow procedures IAW paragraph 1-14 of this regulation.
e. All non-military organizations using indoor firing ranges under their area of command have signed a contract/agreement delineating the conditions of range use and liability. The contract/agreement should also include provisions for hazardous waste disposal expenses.
f. A SOP for each range is established, enforced and approved by the State Safety and Occupational Health Office.
g. All required signs are posted IAW Section 1-22 of this regulation.
h. All individuals using indoor firing ranges under the facility commander's area of command have been provided with a copy of the range SOP or been briefed on the requirements of the SOP, and that these individuals have signed an agreement to follow the rules stated therein. See paragraph 1-29 for record maintenance requirements.
i. Range custodians are enrolled in respiratory protection and medical surveillance programs as required by paragraph 1-37 of this regulation (if applicable).
j. Range custodians have documentation to show that they have been educated about the health effects of exposure to Lead dust IAW 29 CFR 1910.1200 and 29 CFR 1910.1025. This is an annual requirement IAW this standard.
k. No equipment or furniture, such as tables, chairs or storage cabinets, is stored or maintained in the range.
l. All range safety officers and maintenance personnel have a copy of this regulation, AR 385-63, and the range SOP and are familiar with and in compliance with all indoor firing range policies and procedures.
m. The range ventilation system is checked every 480 hours of operation IAW paragraph 1-27 of this regulation.
n. Personnel do not fire ammunition in excess of the allowable time as dictated by established exposure limits. (See Figure 1-1).
o. Exposure records shall be maintained IAW paragraph 1-34 when personnel are exposed to airborne Lead concentrations in excess of 0.03 milligrams per cubic meter (mg/m^3).
p. Lead fragments are not removed from the bullet trap or surrounding areas except as coordinated through the State Environmental Office.
q. The use of M16 rifles using 5.56 mm ammunition in the indoor firing range is *prohibited*, except on ranges where the bullet trap is rated for 5.56 mm ammunition. Otherwise, the M16 shall be used with .22 caliber adapter and ammunition.
r. The ventilation system is in operation at all times during firing or cleaning.

1-14. Range Custodians
Custodians shall- -

a. Ensure that all individuals using the indoor firing range understand the range safety regulations, rules, and SOP.
b. Ensure that all cleaning procedures are performed IAW the requirements of this regulation and the procedures prescribed in the Addendum. This includes documentation of dates, names of personnel and time on the range for all cleaning procedures. See paragraph 1-29 for record maintenance requirements.

c. Maintain the visitor log IAW the range SOP. As a minimum the log should include the names of the shooters, the amount of time spent in the range by each individual, the date of firing, the type(s) of ammunition fired, and the number of rounds fired. See paragraph 1-29 for record maintenance requirements.

d. Forward a copy of the visitor log to the State Safety and Occupational Health Managers on a quarterly basis

1-15. Unit Commanders

Unit Commanders shall- -

a. Enforce all range safety and occupational health procedures.

b. Maintain a record of time spent on the range for all personnel using **"limited use"** firing ranges as recorded by the range custodian.

c. Provide the State Occupational Health Nurse with a list of personnel firing in ranges classified as **"limited use"** ranges for more than the prescribed times listed in Figure 1-1. See paragraph 1-29 for record maintenance requirements.

d. Designate range safety officers in writing.

e. Provide the State Occupational Health Nurse with a list of range safety officers and custodians.

f. Ensure all range safety officers and range custodians are enrolled in the Medical Surveillance and Respiratory Protection Programs, as required.

1-16. Procedures, classification and use

Indoor firing ranges have been built in armories for many years. Each range design reflects the current emphasis and technology on protecting the health and safety of the shooter. Older ranges may not meet the current standards deemed necessary to accomplish this. However, under controlled conditions, many older ranges will not expose users to hazardous conditions.

1-17. Classification of ranges

Based on inspection data collected on the range inspection checklist (Figure 1-2), ranges shall be classified as **"safe"**, **"limited use"** or **"unsafe"**. **Safe** ranges permit authorized firing for military and civilian use. **Limited use** ranges permit use only under controlled conditions based on the personnel exposure limits for intermittent Lead exposure. (Figure 1-1). **Unsafe** ranges are not authorized for use under any conditions.

a. **Building envelope.** (Design standards may be found in DG 415-1, Appendix A or CEHND 1110-1-18).

(1) **Safe ranges.**

(a) Each firing lane is at least 4 feet wide.

(b) Pipes, conduits, lights, lighting fixtures and other projecting surfaces are baffled or covered by a material that will protect these items and prevent ricochets.

(c) Baffles do not disrupt the uniform airflow in the range.

(d) In older ranges, sidewall windows in front of the firing line have been removed and the openings sealed flush to the wall with materials compatible with the adjacent walls. New ranges are not built with windows in front of the firing line.

(2) **Unsafe ranges.**

(a) All firing lanes are less than 4 feet wide. If any one firing lane is less than 4 feet wide, that lane shall not be used for firing.

(b) Pipes, conduits or walls are not sealed to prevent migration of Lead dust to other areas of the range. (See the Addendum for wipe sample procedures used to determine if Lead dust is leaking from the range).

(c) There are open floor drains in the range.

(d) Carpet is located in any part of the range. (Contact the State Environmental Offices for hazardous waste disposal procedures.)

(e) Doors or windows located downrange of the firing line.

(f) Range buildings do not meet the other requirements of safe ranges as prescribed in the checklist in Figure 1-2 of this document.

b. **Ventilation**

(1) **Safe ranges.**

(a) The range has an operational mechanical ventilation system.

(b) The average airflow at the firing line in each firing lane is at least 50 feet per minute (fpm).

(c) Air is exhausted at or behind the bullet trap.

(d) Supplied air is introduced into the range behind the shooters.

(e) The ventilation system is so constructed that air exhausted from the indoor firing range does not enter into another part of the building or any other air supply system.

(f) The exhaust exceeds the make-up air by approximately 10% to form a negative air pressure in the range in relation to adjoining areas.

(g) Air is not recirculated in the firing range unless equipped with monitoring equipment as specified in section 1-26 of this regulation.

(h) The static pressure, as measured from 6 inches inside the range entrance to 6 inches outside the range, is at least -. 05 inches of water gauge (wg) but does not exceed -.20 wg.

(i) A smoke test of the range shows laminar airflow in the range and no turbulence at the firing line. (See the Addendum, for troubleshooting guidance)

(j) In passive make-up air systems, the supply air louvers and exhaust fan shall be electrically interlocked.

(k) In systems with active make-up air, the supply and exhaust fans shall be electrically interlocked. The make-up air fan should start after the exhaust fan to ensure the range maintains a negative pressure.

(l) Range air temperature should be between 65 degrees and 80 degrees Fahrenheit.

(2) **Unsafe ranges.**

(a) The airflow at the firing line on any lane is less than 50 fpm at any level and air sampling results suggest possible overexposure as determined by a competent person.

(b) The range has no mechanical ventilation.

(c) The ventilation system is constructed in a manner that allows exhaust air to enter into other parts of the building or another building air supply system.

(d) The make-up air exceeds the exhaust, which forms a positive air pressure in the range in relation to adjoining areas.

(e) Air is exhausted anywhere other than at the bullet trap.

(f) Make-up air is supplied only from adjacent areas of the building with no provision for inclusion of outside air.

(g) The static pressure, as measured from 6 inches inside the range entrance to 6 inches outside the range, is measured less than -. 05 wg or in excess of -. 2 wg.

(h) The range is under positive pressure.

(i) The supply and exhaust air systems are not electrically interlocked.

c. **Range lighting.**

(1) **Safe ranges.**

(a) Lighting is uniform, non-glaring and does not cause shadows.

(b) Illumination is at least 100 foot candles on the targets and 30 foot- candles in all other areas.

(c) All lighting is protected by baffles and placed so that the shooter has an unobstructed view down range.

(d) Downrange lighting begins approximately 18 feet from the firing line and ends approximately 8 feet from the target line.

(e) Emergency lights are provided behind the firing line and are in working condition.

(f) Exit lights are provided as required.

(g) Lighting of at least 30-foot candles is provided behind the bullet trap for maintenance.

(2) **Unsafe ranges.**

(a) Illumination is below 100 foot-candles on targets or 30 foot-candles in other areas.

(b) Portions of the lighting fixtures are not protected by baffles.

(c) Electrical hazard exists in the range.

d. **Bullet traps.**

(1) **Safe ranges.**

(a) A bullet trap is permanently installed in the range.

(b) Bullet traps are of a commercial design that complies with the requirements of CEHND 1110-1-18, DG 415-1 App. A, and this regulation.

(c) The thickness of inclined plate/sand trap type bullet trap shall be adequate to attenuate the maximum caliber of ammunition authorized to be fired on the range. See CEHND 1110-1-18, for thickness requirements for the bullet trap.

(d) All plate/sand trap type bullet traps shall be designed to prevent ricochets by directing the projectiles in the same direction they are traveling.

(e) Sandpits in plate/sand trap type backstops shall extend to a point directly below the leading edge of the sloped plate.

(f) Forward edges in a escalator or venetian blind type bullet trap are maintained in a knife edge condition to prevent ricochets.

(2) **Unsafe ranges.**

(a) Steel bullet traps are bowed, punctured or severely pitted.

(b) Plates in the bullet trap are flush with the other plates. Mold seams are ground smooth.

(c) Any type of portable bullet stop is used.

(d) Forward edges in a escalator or venetian blind type bullet trap are maintained in less than a knife edge condition

e. **Targets and target carriers.**

(1) **Safe ranges.**

(a) A target retrieval system is operable in all lanes and is constructed in such a manner as to minimize flat surfaces exposed to the firing line. (Firing lanes without a target retrieval system shall not be used).

(b) Only paper targets are used.

(2) **Unsafe ranges.** Target retrieval system is inoperable or not installed in the entire range, or target retrieval system exposes flat surfaces to the firing line.

f. **Lead levels.**

(1) **Safe ranges.**

(a) For personnel exposed less than 30 days per year, Lead levels do not exceed 0.05 mg/m^3.

(b) For personnel exposed more than 30 days per year and for all non-Department of Defense (DoD) personnel, Lead levels do not exceed 0.03 mg/m^3.

(c) For personnel under the age of 18, see Figure 1-1.

(2) **Limited use ranges.**

(a) For personnel exposed less than 30 days per year, Lead levels exceed 0.05 mg/m^3 but do not exceed 0.4 mg/m^3 in any breathing zone or general area sample. Personnel exposures shall be controlled by limiting the shooters to the times described in Figure 1-1.

(b) For personnel exposed more than 30 days per year and for all non-DoD personnel, Lead levels exceed 0.03 mg/m^3 but do not exceed 0.4 mg/m^3 in any breathing zone or general area sample.

(3) **Unsafe ranges.**

Lead levels in air sample results exceed 0.4 mg/m^3 in any breathing zone or general area sample.

1-18. Range use

a. Indoor firing ranges shall not be used for any purpose other than firing. (I.e., they shall not be used for classrooms, exercise rooms, storage, etc.).

b. Ranges classified as unsafe may be used for other purposes only after proper decontamination IAW the guidance provided in the Addendum, Guidelines and Procedures for IFR Rehabilitation, Conversion, and Cleaning.

c. The ventilation system is in operation at all times during firing or cleaning.

d. Equipment or furniture shall not be stored or maintained in the range, plenum area or behind the bullet trap. (For removal of equipment or furniture, use cleaning instructions provided in the Addendum).

e. A hand-held ABC-type fire extinguisher is located near the entrance door, inside the firing range.

1-19. Prohibitions

a. Personnel shall *not* be permitted in the plenum area during firing even if designed for observation.

b. Plenum area and area behind the bullet trap shall *not* be used for storage of any equipment.

c. An area directly in front of the plenum wall shall be kept clear at all times to preclude obstruction of airflow.

d. Variable speed fans are *not* permitted.

e. Dry sweeping of indoors firing ranges is *prohibited*. Brooms shall not be stored in the range.

f. Walking downrange is *prohibited* for individuals other than maintenance and inspection personnel.

g. Pellets, BBs, magnum and armor piercing rounds are *prohibited* in all indoor firing ranges.

h. To prevent contamination with Lead dust, clothing or equipment that is not required for firing shall *not* be permitted into the range.

I. Storage of ammunition and explosives in indoor firing ranges is *prohibited*, except in approved and licensed facilities.

j. There are no open floor drains in the range.

k. Carpet will not be located in any part of the range (Contact the State Environmental Office for hazardous waste disposal procedures).

1-20. Personal protective equipment

a. **Eye protection.** All personnel in an indoor firing range during firing shall wear eye protection that meets the requirements of ANSI Z87.1-1999, Practice for Occupational and Educational Eye and Face Protection.

b. **Hearing protection.** All personnel in an indoor firing range during firing shall wear Army approved hearing protection listed in DA Pam 40-501. When noise levels exceed 165 dBP, personnel must wear earplugs in combination with noise mufflers.

c. **Respiratory protection.** For respiratory protection requirements during indoor firing range conversion cleanup operations, see the Addendum.

1-21. Posting warning signs

a. The following signs shall be posted in or in the vicinity of indoor firing ranges IAW AR 385-63:

(1) Eating, Drinking and Smoking are *prohibited*
(2) Dry Sweeping is *prohibited*
(3) Wash Hands and Face Immediately Following Firing
(4) Only the Following Ammunition is *authorized* for use on this Range: _____
(5) Hearing Protection *shall be* properly worn during firing
(6) Proper Safety Glasses/Goggles *shall be* worn during firing
(7) Furniture or storage of other items of equipment is *not* permitted in the range

b. The following signs shall be posted on the entrance door to the range:

(1) Noise Hazardous Area
(2) Danger Lead Hazard Area
(3) Pregnant women are *not* permitted in this area.

c. An illuminated warning sign, which is interlocked with the range ventilation switch, shall be located outside of the firing range to alert individuals that the range is in use.

d. Each firing lane shall be numbered at the firing line and at the bullet trap visible to all shooters. This is to ensure shooters use the correct target.

e. A warning sign *shall be* posted outside of the access door to the bullet trap, which warns personnel not to enter during range operation.

Note: All signs shall meet the requirements of DA Pam 385-64.

1-22. Range Standing Operating Procedures.

a. Each indoor firing range shall have a written SOP, which is approved by the State Safety and Occupational Health Office, see figure 1-3.

b. Range SOPs shall include, as a minimum, the following:

(1) The requirement for establishment and maintenance of a log of visitors for the indoor firing range. The log shall include the following information for all visitors:

(a) Name and age of shooter.

(b) Organizations (if civilian, include address and phone number).

(c) Sign-in and sign-out times and date.

(d) Type of ammunition used and number of rounds fired.

(2) The requirement for and contents of a mandatory safety briefing for all individuals prior to entering the range to be given by a designated competent range safety officer.

(3) Work practices including permissible and banned practices as specified by this regulation.

(4) Instructive guidance for all range procedures.

(5) Personnel responsibilities for performing the procedures, for supervising them, and reviewing and updating the SOP.

(6) Authorized ammunition for the range.

(7) The requirement for posting of signs IAW section 1-21 of this regulation.

(8) Cleaning and maintenance requirements.

(9) Personal protective equipment requirements for maintenance, firing and cleaning.

c. Refer to TG 206 for more general guidance on SOPs.

1-23. Inspection requirements.

The first part of each inspection shall be the physical safety inspection conducted by the State Safety Manager. Once the firing range has passed this portion of the inspection, a competent person shall complete the ventilation survey and air sampling requirements.

1-24. Initial inspections

a. An initial inspection of all new and renovated indoor firing ranges shall be completed before the facility is accepted. The inspection report shall be kept on file with the State Safety and Occupational Health Office. The checklist in Figure 1-2 shall be used for this purpose. See paragraph 1-29 for record maintenance requirements.

b. Findings on the initial firing range inspection, ventilation measurements, and air sampling results shall determine the range classification.

1-25. Annual inspections

a. A safety inspection of each active range shall be made annually to ensure safety standards, procedures and records are maintained in the operation of the range. These inspections shall be completed by State Safety personnel IAW AR 385-10. The checklist in Figure 1-2 shall be used for this purpose.

b. In accordance with AR 385-63, the annual inspection shall be performed within 45 days of the anniversary date of the initial inspection or the last annual inspection.

c. Verify that ventilation measurements have been recorded ever 480 hours of operation.

d. Ensure that air sampling has been conducted after changes or additions have been made to the range.

1-26. Ventilation requirements

a. Procedures for evaluating supply and exhaust ventilation systems, firing line velocities and static pressure readings are identified in the Addendum.

b. If air from the indoor firing range exhaust ventilation system is recirculated into the supply system of the range, the system shall have a high efficiency particulate air (HEPA) filter with reliable back-up filter. In addition, controls to monitor the concentration of Lead and Carbon Monoxide in the return air *shall be* installed and programmed to bypass the recirculation system automatically if the filter system fails. This system shall be operating and maintained IAW 29 CFR 1910.1025(e)(4)(ii).

1-27. Air sampling requirements

a. Initial air sampling to determine airborne Lead dust levels during prescribed firing procedures shall be conducted for all IFRs prior to routine use. If initial determination reveals employee exposure to be at or above .003 ug/m^3 sampling shall be repeated IAW 29 CFR 1910.1025(d)(6)(ii).

b. Air sampling shall be accomplished for each type of ammunition to be used in the range. (For air sampling procedures, see the Addendum).

c. After the initial air sampling, air sampling is required only if changes or additions have been made to the range, there are changes in ammunition or weapons used in the range, or if changes have occurred in ventilation measurements. Once changes occur, air sampling shall be completed every two-years and prior to range use.

d. ARNG Regional Industrial Hygienists are responsible for air sampling of indoor firing ranges to determine airborne Lead concentrations. A competent person as designated by a Regional Industrial Hygienist may conduct the air sampling.

e. The State Occupational Health Nurse shall maintain copies of all air sampling results when required as part of personnel exposure records. See paragraph 1-11 for specific requirements.

1-28. Inspection reports

A completed inspection report shall be provided to the state Adjutant General for information or action as appropriate. An information copy shall also be provided to the Commander of the facility and to the state safety manager. A complete inspection report shall consist of the completed safety inspection checklist, ventilation data, and air sample results (initial inspection and as required by paragraph 1-24 above). Subsequent inspections shall be made as a follow-up check against results of previous inspections to assure required corrective actions have been accomplished, and there are no adverse changes to the buildings' integrity, safety equipment, environment or safe operating procedures.

1-29. Record maintenance

a. All exposure monitoring and medical surveillance records shall be maintained for 40 years or the duration of employment plus 20 years, whichever is longer, as prescribed in 29 CFR 1910.1025, Appendix C.

b. The State Safety Manager shall maintain a record of all inspections for each indoor firing range in the state. All inspections after the initial one shall be used as follow-up checks against previous inspection reports. This is to ensure that required corrective actions have been accomplished and that there have been no structural changes to the building, environmental conditions or safe operating procedures. These records shall be checked during program evaluations and industrial hygiene surveys.

1-30. Control of potential Lead intoxication

Occupational Safety and Health Administration (OSHA) Lead standard

a. The requirements of the OSHA Lead standard (29 CFR 1910.1025) shall be followed. The requirements include development of a written compliance program for the protection of workers from Lead exposures (29 CFR 1910.1025(e)(3)). The program shall include at a minimum the following:

(1) A description of each operation where Lead is emitted;
(2) Methods used to achieve compliance;
(3) Methods used to meet the permissible exposure level;
(4) Air monitoring data, which documents the source of air emissions;
(5) A detailed schedule for implementation of the program;
(6) Work practices including PPE (Personal Protective Clothing and Equipment), housekeeping, hygiene facilities and practices;
(7) Administrative control schedule;
(8) Personnel enrollment in medical surveillance;
(9) Other relevant information.

b. Refer to TG 206 for specific guidance on developing the compliance program.

1-31. Alternative ammunition

a. Reduced-Lead and Lead-free ammunition (non-Lead containing bullets) has become commercially available. These alternatives to conventional ammunition should be considered for training use if command policy allows.

b. Lead-free ammunition is being developed which shall have the same ballistic properties as the Lead counterparts. The potential exists for some Lead containing ammunition to be completely replaced by Lead-free ammunition for training and operational uses.

c. Until Lead-free ammunition is available, Lead exposure can be significantly reduced by the use of jacketed rounds. Most bullet traps are rated for the use of jacketed ammunition, but this should be verified with the bullet trap manufacturer.

1-32. Maintenance requirements

a. The following are minimum maintenance requirements, which shall be performed every three months by the range custodian or by a person designated by the facility commander:

(1) Inspect the ventilation system fan for condition of belts to ensure that the belts are not torn or frayed and that they are not slipping.

(2) Evaluate static pressure and compare to the baseline static pressure reading. Any changes shall be reported to the State Safety and Occupational Health Office for further evaluation.

(3) Inspect louvers, if applicable, to ensure they are opening fully.

(4) Lubricate the bullet trap (if applicable).

(5) Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

b. See the Addendum for a complete list of maintenance requirements for the bullet trap.

1-33. Housekeeping

a. The ventilation system shall be in operation during all cleanup operations.

b. An approved National Institute for Occupational Safety and Health (NIOSH) respirator (P-100) for Lead exposure *shall be* used during cleanup operations.

c. During range cleaning operations, workers shall wear coveralls or similar full-body clothing, gloves, hat and change of shoes or disposable booties, face shields and goggles, or other equipment to protect the workers skin and eyes.

d. Blowing, shaking or any other means, which disperses Lead into the air, *shall not* be used to remove Lead dust accumulated on worker's clothing or equipment. A designated area shall be used for changing clothes to prohibit the spread of contamination. Workers shall shower and change clothes before release from work.

e. Wet cleaning methods or vacuum cleaning with HEPA filtration shall be utilized during normal cleaning operations. Dry sweeping, dusting, wiping or blowing with compressed air *shall not* be permitted.

f. The range shall be cleaned at the end of each firing day with a HEPA vacuum or wet mop method.

g. When performing the cleaning, clean the floor and all horizontal surfaces fifteen feet in front of and behind the firing line, or when there is a visible accumulation of lead dust.

h. Wash water contaminated with Lead can be collected and allowed to slowly evaporate leaving Lead deposits/sludge that may be collected in plastic containers, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums *shall be* properly labeled to identify contents. Disposal of containerized waste *shall be* coordinated IAW state hazardous waste program requirements.

i. The State Environmental Office shall coordinate removal and disposal of all containerized hazardous waste derived from routine use, cleaning, and maintenance of IFRs. Contact your State Environmental Office for proper disposal instructions when bullet trap catch trays are ¾ full. Spent cartridge cases shall be collected and processed in accordance with local ammunition inventory and accountability procedures, AR 710-2, and DA PAM 710-2-1.

j. Prior to converting an indoor firing range to other uses, the entire range area shall be properly decontaminated of any Lead residue. For cleaning and decontamination instructions, see the Addendum.

1-34. Maximum exposure hours
Personnel exposure limits for intermittent atmospheric Lead contamination has been developed by the U.S. Army Medical Command (MEDCOM) in the form of a table of Lead exposure limits (Figure 1-1). This table was developed to control intermittent Lead exposure and to establish maximum allowable hours of exposure based on the airborne Lead concentration and the number of days firing per year. Intermittent exposures to Lead in indoor firing ranges shall be controlled according to the criteria provided in the table of Lead exposure limits as an interim control measure only. Maximum effort *shall be* made to introduce permanent control measures to reduce the airborne Lead levels to 0.03 mg/m^3 or less. Exposure records shall be maintained by the commander of the facility on all personnel who use the firing range when the airborne Lead levels exceed $0.03\ mg/m^3$. These records shall contain the airborne Lead concentrations and the amount of time spent on the range for each individual. Other potential Lead exposure, including off duty firing, may contribute to an individuals overall exposure and should be considered in establishing maximum allowable exposure time.

1-35. Extent of use
a. The extent of use for any indoor firing range *shall be* based on permissible exposure of all using personnel to concentrations of airborne Lead dust.
b. Under no circumstances shall pregnant women be permitted in an indoor firing range, IAW 29 CFR 1910.1025, Appendix C, Section II (5).
c. Personnel under 17 years of age are *prohibited* from entering any range area with a Lead concentration greater than 0.100 mg/m^3. For ranges with Lead concentrations less than 0.100 mg/m^3, follow the guidelines in Figure 1-1.
d. Use of the indoor firing range by non-military organizations shall be approved and documented in writing by the State Safety Manager.

1-36. Medical surveillance
a. Personnel who are or may be exposed to Lead above the action level (0.03 mg/m^3) for more than 30 days per year shall be enrolled in the Medical Surveillance Program.
b. Medical surveillance is not required for intermittent users of indoor firing ranges if the maximum allowable exposure hours shown in Figure 1-1 is not exceeded.

1-37. Terms
a. **Backsplatter**-This refers to the small particles, which break off of a bullet as it impacts the bullet trap. Variables such as the bullet composition, angle of the bullet trap, and the velocity of the impact dictate the amount and pattern of the backsplatter. A ricochet occurs when the main body of the bullet is deflected off the surface of the bullet trap.
b. **Competent person**-An individual who has been specifically trained to identify safety and occupational health hazards associated with Lead dust and indoor firing ranges. The individual is aware of current regulations governing indoor firing ranges and of ventilation principles and terminology, air sampling media and collection requirements and can interpret air sample results. He can provide appropriate guidance in the abatement of known hazards and has the authority to do so. He can correctly use diagnostic ventilation evaluation equipment and interpret results. He has received written authorization from the regional industrial hygiene office to properly evaluate indoor firing ranges.
c. **Plenum**-This term refers to a chamber used to build static pressure before the air enters the firing range. Air is introduced into the plenum from the side, top, or back and is forced through a perforated wall (called the plenum wall) behind the firing line.
d. **Smoke Testing**-To conduct a smoke test, a smoke candle is ignited behind the firing line. The smoke is used to check the airflow at and in front of the firing line. There should be laminar flow down the range to the bullet trap and no turbulence at the firing line. It is also important to ensure the smoke does not circle back behind the firing line.

FIGURE 1-1

0.000 - 0.029	8	8	4
0.030 - 0.039	8	6	3
0.040 - 0.049	8	4.5	2
	LIMITED USE RANGES	LIMITED USE RANGES	LIMITED USE RANGES
0.050 - 0.059	6	4	2
0.060 - 0.079	5	3	1
0.080 - 0.099	4	2.25	1
0.100 - 0.149	2.5	1.5	0
0.150 - 0.199	2	1	0
0.200 - 0.299	1.25	0.75	0
0.300 - 0.399	1	0.5	0
0.400 – 0.499	0.75	0.5	0
0.500 – 0.749	0.5	0.25	0
0.750 – 0.999	0.25	0.25	0
1.000 or above	0	0	0

- **These values are the actual concentrations measured over the sampling period and are not 8-hour time-weighted averages.**
- **Adherence to these guidelines shall prevent overexposure to Lead in indoor firing ranges.**

* Recommend that an Occupational Health Physician make the determination on length of firing time for individuals 17 years of age and younger.

FIGURE 1-2

INDOOR FIRING RANGE INSPECTION CHECKLIST

See paragraphs 1-23 through 1-25 of this regulation for inspection requirements. For the range to be considered safe each of the following statements shall be true and air-sampling results shall be below the standard for Lead. The information in parentheses after each statement denotes the location of the requirement in this or other regulations.

Location of the Range _____ Date _____

Range Custodian _____ Telephone _____

Part 1, Physical Safety Inspection

A. Building Envelope

_____ 1. Each firing lane is at least 4 feet wide. [1-17a(1)(a)]

_____ 2. Pipes, conduits, and other projecting surfaces are baffled or covered by a material that shall protect these items and prevent ricochets. [1-17a(1)(b)]

_____ 3. No windows or doors are located in front of the firing line. (Except access door to the back of the bullet trap) [1-17a(1)(d)]

_____ 4. There are no open floor drains in the range. [1-17a(2)(c)]

_____ 5. There is no carpet, drapes or other fiber-like material in the range. [1-17a(2)(d)]

_____ 6. Pipes, conduits and walls are sealed to prevent leakage of Lead dust from the range into other areas. [1-17a(2)(b)]

_____ 7. The interior surfaces or the range floor, walls, and ceiling have no protruding edges or devices. [DG 415-1, App.A, 3-1d]

_____ 8. The roof provides ballistic security. [DG 415-1, App. A, 3-1e(1)]

_____ 9. The walls provide ballistic security. (DG 415-1, App. A, 3-1f(1))

_____ 10. Interior mortar joints are flush with the interior surface. (DG 415-1, App. A, 3-1f(2))

_____ 11. The plenum wall is adequately supported and thick enough to avoid flexing. (DG 415-1, App. A, 3-1f(4))

_____ 12. The entrance door to the range is weather-stripped unless the door acts as passive make-up air intake. (DG 415-1, App. A, 3-1h)

B. Range Lighting

_____ 1. Lighting is uniform, non-glaring and does not cause shadows. [1-17c(1)(a)]

_____ 2. Illumination is at least 100 foot candles on the targets and 30 foot candles in all other areas. [1-17c(1)(b)]

_____ 3. All lighting is protected by baffles and placed so that the shooter has an unobstructed view down range. [1-17c(1)(c)]

_____ 4. Downrange lighting begins approximately 18 feet from the firing line and ends approximately 8 feet from the target line. [1-17c(1)(d)]

_____ 5. Emergency lights are provided behind the firing line and are in working condition. [1-17c(1)(e)]

_____ 6. Exit lights are provided and working as required. [1-17c(1)(f)]

_____ 7. Lighting of at least 30 foot-candles is provided behind the bullet trap for maintenance (if applicable). [1-17c(1)(g)]

_____ 8. No known electrical hazards exist in the range. [1-17c(2)(c)]

C. Bullet traps

_____ 1. A bullet trap is permanently installed in the range. [1-17d(1)(a)]

_____ 2. Bullet traps are of a commercial design, which is in compliance with the requirements of CEHND 1110-1-18, NGB-ARI, the Addendum, and this regulation. [1-17d(1)(b)]

_____ 3. The thickness of inclined plate/sand trap type bullet trap shall be adequate to attenuate the maximum caliber of ammunition authorized to be fired on the range. [1-17d(1)(c)]

_____ 4. All plate/sand trap type bullet traps are designed to prevent ricochets by directing the projectiles in the same direction they are traveling. [1-17d(1)(d)]

_____ 5. Sandpits in plate/sand trap type backstops extend to a point directly below the leading edge of the sloped plate. [1-17d(1)(e)]

_____ 6. Forward edges in a louver or venetian blind type bullet trap are maintained in a knife edge condition to prevent ricochets. [1-17d(1)(f)]

_____ 7. Steel bullet traps are not bowed, punctured or severely pitted. [1-17d(2)(a)]

_____ 8. Plates in the bullet trap are flush with the other plates. Mold seams are ground smooth. [1-17d(2)(b)]

D. Targets and target carriers

_____ 1. A target retrieval system is operable in all lanes. [1-17e(1)(a)]
(Any one firing lane without a retrieval system shall not be used for firing)

_____ 2. The target retrieval system is constructed in such a manner as to minimize flat surfaces exposed to the firing line. [1-17e(1)(a)]

_____ 3. Only paper targets are used in the range. [1-17e(1)(b)]

E. Range use

_____ 1. The range is not used for any purpose other than firing. [1-18a]

_____ 2. No equipment or furniture is stored or maintained in the range, plenum area or behind the bullet trap. [1-17d]

_____ 3. No additional clothing or equipment is brought into the range. [1-19h]

_____ 4. Personnel are *not* permitted in the plenum area during firing even if designed for observation. [1-19a]

_____ 5. Individuals other than maintenance and inspection personnel are not allowed to walk downrange. (Except in regularly cleaned area as needed to pick up brass) [1-19f]

_____ 6. All areas directly in front of the plenum walls are kept clear at all times. [1-19c]

_____ 7. Pellets, BBs, magnum and armor piercing rounds are not used in the range. [1-19g]

_____ 8. The ventilation system is in operation at all times during firing or cleaning. [1-18c]

_____ 9. A hand-held ABC-type fire extinguisher is located in a recessed cabinet near the entrance door, inside of the firing range. [DG 415-1, App. A, 4-5]

F. Range maintenance

_____ 1. Dry sweeping does not occur in the range. [1-19e]

_____ 2. No brooms are located in the range. [1-19e]

_____ 3. A range custodian is appointed for the range who is fully trained and aware of his/her responsibilities. [1-13c]

G. Personnel protective equipment

_____ 1. All personnel in the range during firing wear ANSI approved eye protection. [1-20a]

_____ 2. All personnel in the range during firing wear ANSI approved hearing protection. [1-20b]

H. Posting of signs

_____ 1. The following signs are posted in or in the vicinity of the range: [1-21a]
- _____ a. Eating, Drinking and Smoking are *Prohibited*
- _____ b. Dry Sweeping is *Prohibited*
- _____ c. Wash Hands and Face Immediately Following Firing
- _____ d. The Following Ammunition is authorized for use on this Range: _____
- _____ e. Hearing Protection *shall be* Properly worn during firing
- _____ f. Proper Safety Glasses/Goggles *shall be* worn during firing
- _____ g. No Furniture or Storage of Items Permitted in the Range

_____ 2. The following signs are posted on the entrance door to the range: [1-21b]
- _____ a. Noise Hazardous Area
- _____ b. Danger Lead Hazard Area
- _____ c. Pregnant women are *not* permitted in this Area

_____ 3. An illuminated warning sign, which is interlocked with the range ventilation switch, is located outside of the firing range to alert individuals that the range is in use. [1-21c]

_____ 4. Each firing lane is numbered at the firing line and at the bullet trap visible to all shooters. [1-21c]

_____ 5. A warning sign is posted outside of the access door to the bullet trap, which warns personnel not to enter. [1-21e]

I. Range SOP

_____ 1. The indoor firing range has a written SOP, which is approved by the State Safety and Occupational Health Office. [1-10a]

_____ 2. The range SOP includes as a minimum the following: [1-22b]

_____ a. The requirement for establishment and maintenance of a log of visitors for the indoor firing range.

_____ b. The requirement for and contents of a mandatory safety briefing for all individuals prior to entering the range to be given by a designated competent range safety officer.

_____ c. Work practices including required, recommended, permissible and banned practices ae specified by this regulation.

_____ d. Instructive guidance for all range procedures.

_____ e. Personnel responsibilities for performing the procedures, for supervising them, and reviewing and updating the SOP.

_____ f. Authorized ammunition for the range.

_____ g. The requirement for posting of signs IAW section 1-21 of this regulation.

_____ h. Cleaning and maintenance requirements.

_____ i. Personal protective equipment requirements for maintenance, firing and cleaning.

J. Recordkeeping

_____ 1. A visitors log is maintained which includes the following information for all visitors/shooters: [1-14c]

_____ a. Name and age of shooter.

_____ b. Organization (if civilian, include address and phone number).

_____ c. Sign in and sign out times.

_____ d. Type of ammunition used and number of rounds fired.

_____ 2. Copies of initial and other previous inspections are available. [1-24a]

_____ 3. The initial inspection report includes air-sampling data. [1-24b]

_____ 4. An OSHA compliance program is in place, which covers the required aspects. [1-30a]

_____ 5. All individuals using the indoor firing range have been provided with a copy of the range SOP or been briefed on the requirements of the SOP, and have signed an agreement to follow the rules stated therein. [1-13h]

_____ 6. State maintenance officers/custodians have documentation to show that they have been educated to the health effects from exposure to Lead dust. [29 CFR 1910.1200 and 29 CFR 1910.1025]

_____ 7. Range safety officer(s) is/are designated. [1-13c]

K. New and Renovated Ranges

_____ 1. No doors are installed in the plenum wall.

_____ 2. Plenum area is at least 4 feet deep.

_____ 3. An access door is installed behind the bullet trap.

_____ 4. Only escalator or rubber bullet traps are installed.

INDOOR FIRING RANGE INSPECTION CHECKLIST

Part 2, Ventilation Inspection

A. Existing Ranges

_____ 1. The range has an operational mechanical ventilation system. [1-17b(1)(a)]

_____ 2. The minimum ventilation rate at the firing line in each firing lane is 50 fpm at all levels. [1-17b(1)(b)]

_____ 3. 100% of air is exhausted at or behind the bullet trap. [1-17b(1)(c)]

_____ 4. Make-up air is introduced into the range behind the shooters. [1-17b(1)(d)]

_____ 5. Air that is introduced through vents into the plenum does not exceed a velocity of 600 fpm. [1-17b(1)(e)]

_____ 6. Air exiting through holes in the plenum wall has a velocity between 400 and 600 fpm. [1-17b(1)(f)]

_____ 7. The ventilation system is so constructed that air exhausted from the indoor firing range does not enter into another part of the building or any other air supply system. [1-17b(1)(g)]

_____ 8. The exhaust exceeds the make-up air by approximately 10% to form a negative air pressure in the range in relation to adjoining areas. [1-17b(1)(h)]

_____ 9. If air is recirculated in the range, it is installed with a HEPA filter with a reliable back-up filter. [29 CFR 1910.1025(e)(4)(ii)]

_____ 10. If air is recirculated in the range, controls to monitor the concentration of Lead and Carbon Monoxide levels are installed and programmed to bypass the recirculation system automatically if the filter system fails.
[29 CFR 1910.1025(e)(4)(ii)]

_____ 11. The fan(s) in the ventilation system is a single speed fan only. [DG 415-1, App. A, 3-2a]

_____ 12. A smoke test of the range shows laminar air flow and no turbulence in the range. (See the Addendum for troubleshooting guidance) [1-18b(1)(k)]

_____ 13. In non-powered systems, the supply air louvers and exhaust fan are electrically interlocked. [1-17b(1)(l)]

_____ 14. In power systems, the supply and exhaust fans are electrically interlocked. The make-up air fan should start slightly after the exhaust fan. [1-17b(1)(m)]

_____ 15. Range air temperature is between 65 degrees and 80 degrees Fahrenheit. [1-17b(1)(n)]

B. New and Renovated Ranges

_____ 1. A manometer is installed leading into the exhaust fan, which is capable of measuring at least 20 inches of static pressure.

_____ 2. Supply and exhaust fans are electrically interlocked with the downrange lighting.

_____ 3. The face velocity on supplied make-up and exhaust ducts does not exceed 2000 cfm per square foot of duct space.

_____ 4. Passive supply systems have opposing blade louvers.

_____ 5. Turning vanes are installed in all duct elbows, which have between 60° and 90° angles.

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INDOOR FIRING RANGE INSPECTION CHECKLIST

Part 3, Air Sampling

1. The physical safety inspection, Part 1 of the range inspection checklist, was completed and all requirements met on: _____

2. The ventilation inspection, Part 2 of the range inspection checklist, was completed and all requirements met on: _____

3. Air sampling has been scheduled for: _____

Print and sign: _____

Position: _____ Date: _____

4. Air sampling was completed on: _____ for the following types of ammunition: _____.

5. Air sample results do not exceed: _____ mg/m^3 (results are attached)

6. For military personnel exposed less than 30 days per year, this range is classified as: _____ (SAFE, LIMITED USE, UNSAFE)

7. For military personnel exposed more than 30 days per year and for all non-DoD personnel, this range is classified as: _____ (SAFE, LIMITED USE, UNSAFE)

Print and sign: _____

Position: _____ Date: _____

FIGURE 1-3
EXAMPLE OF INDOOR FIRING RANGE SOP
STATE OF _____, DEPARTMENT OF MILITARY AFFAIRS
XXXX SOUTH MAIN STREET
SOMEWHERE, _____ XXXXX-XXXX
_____ ARMORY INDOOR FIRING RANGE
STANDING OPERATING PROCEDURE (SOP)

1. **References:**

a. AR 385-10
b. AR 385-63
c. NGR 385-10
d. NG PAM 385-XX
e. 29 CFR 1910.1025
f. 29 CFR 1920.1200
g. 29 CFR 1926
h. 29 CFR 1960
I. USACHPPM, TG 141

2. **Purpose.** The _____ Armory indoor firing range SOP is published to establish procedures to minimize the exposure of Lead (Pb) to personnel and provide uniform safe range operations and maintenance procedures. The provisions set forth herein shall govern all actions and personnel associated with range operations.

3. **Review and Update.** This SOP should be reviewed yearly by the Commander of the facility and the State Safety and Occupational Health Office. A cover sheet, which documents the signature and dates of personnel involved with the review of the SOP, should be attached.

4. **General.**

a. Each Officer or Non-Commissioned Officer In-Charge (OIC/NCOIC) of range operations shall maintain a current copy, and be familiar with the provisions of this SOP, and NGR 385-10.

b. These directive and military regulations are applicable to all active duty military, military technicians, federal and state civilian employees and civilian personnel, to include local or state police authorities.

5. **Range Control.**

a. The _____ Armory Commander shall appoint, in writing, a Commissioned Officer, Warrant Officer, or a Senior NCO to the position of Range Control Officer (RCO).

b. The RCO is responsible to perform the following:

(1) Enforce the facility range safety program and SOP.

(2) Notify Armory personnel of times when the range shall be in use.

(3) Coordinate and schedule all activity on the firing range.

(4) Ensure that the range is secured when not in use.

(5) Ensure that nothing is stored at the range.

(6) Investigate and report all accidents and incidents involving weapons and ammunition in accordance with NGR 385-10.

(7) Determine which weapons and ammunition are authorized for the range. This should be coordinated through the Safe Safety and Occupational Health Office and in accordance with manufacturers' specifications.

(8) Ensure that all OIC/NCIOCs are thoroughly familiar with the weapons in use, and that the appropriate operators' manuals for the weapons are on hand.

(9) Prepare a range OIC/NCOIC briefing packet for all using units. The packet should contain, as a minimum; a copy of this SOP, emergency telephone numbers of local rescue authorities, and a current copy of the Accident Prevention Plan (Appendix C of this SOP).

(10) Ensure that mandatory signs listed in NGR 385-10, paragraph 1-21 are posted as required.

6. **Range OIC/NCIOC.** The Commander or supervisor of all using units or groups shall designate an OIC/NCOIC in the grade of E-6 or above to be the responsible for the safe conduct of firing and proper use of the facilities. The commander/supervisor shall ensure that all appointed individuals are qualified to perform their assigned duties. The duties of the range OIC/NCOIC shall include but are not limited to the following:

a. Prior to firing.

(1) Receive a thorough briefing from the RCO, and conduct an inspection of the range with the RCO, or his/her designated representative. If the condition of the range is acceptable, assume control and request clearance from the RCO to fire.

(2) Ensure the overall safe conduct of training and the proper use of the facility.

(3) Ensure that all participants are familiar with the verbal commands, hand signals, range procedures and safety requirements.

(4) Be present when the range is in use and determine when it is safe to fire.

(5) Be knowledgeable of the weapons to be used and ensure that only authorized weapons and ammunition are used. Ensure that the proper operators' manuals are available for each individual using the range.

(6) Be familiar with the Accident Prevention Plan and have a current copy on hand prior to commencement of firing.

(7) Ensure that at least three individuals are present on the range when the range is in use.

(8) Ensure that all personnel wear the proper hearing and eye protection as required.

(9) Ensure that all individuals using the range have singed-in on the roster maintained by the facility Commander.

(10) Ensure that the range has a working telephone, or that other means of emergency communication is available.

(11) Ensure that appropriate emergency medical personnel have been notified that the range is in use, and that the projected hours of operation are from _____ to _ _ _ _ hours.

b. During Firing.

(1) Ensure that personnel do not leave the firing line without the permission of the OIC/NCOIC.

(2) Ensure that the muzzle of each weapon is pointed downrange at all times. Personnel may holster their handguns after being cleared by the OIC/NCOIC to do so.

(3) When not in use, revolvers shall have cylinders open and automatic weapons shall have magazines removed and the slide/receiver locked to the rear. Rifles shall also have the magazine removed, if applicable, bolts and/or slides open or locked to the rear when not in use. Weapons shall be carried to and from the firing line in the configuration described above, with the muzzle pointed downrange.

(4) Ensure that weapons malfunctions/jams are cleared only at the direction of the OIC/NCOIC in accordance with the procedures established in the operators' manual for the weapon.

(5) Ensure that weapons are cleared and checked during temporary suspension of firing.

(6) Ensure that firing is stopped promptly when an unsafe act is observed or reported.

(7) Do not permit persons to walk in front of the firing line during firing. Lanes with inoperable target retrieval systems shall not be used.

(8) Limit firing time, if applicable. This limitation shall be based on air-sampling results for individuals using the range and ventilation measurements. Contact the State Safety Manager to determine if the range has time limitations placed upon it.

c. After Firing.

(1) Ensure that all weapons are cleared prior to being removed from the firing line.

(2) Ensure that all individuals on the range thoroughly wash their hands and face immediately after leaving the range.

(3) Ensure that all bullet casings are removed from in front of and behind the firing line and that the range is restored to a serviceable condition. **Dry sweeping of the range is prohibited.**

(4) Conduct a final inspection of the range. Secure the range, and turn the keys and shooters log into the RCO or his/her designated representative.

7. **Range Control Officer Qualifications.** His or her commander may appoint any individual in the rank of E-6 and above to the Rang Control Officer. Appointment orders for all RCOs shall be maintained on-file at the facility. Commanders of each facility shall ensure that all RCOs have been properly instructed and are competent in performance of their duties. Law enforcement and civilians requesting appointment to perform RCO duties, shall show evidence that they have completed an Army and/or National Rifle Association approved firearms instructor's course or equivalent prior to appointment.

8. **Range Restrictions.**

a. The _____ Armory is restricted to firing the following ammunition based upon manufacturer specifications:

EXAMPLE

(1) .22 caliber including the M-16 with adapter
(2) .38 caliber
(3) .45 caliber
(4) 9 mm pistols

Note: No other weapons can be fired without the approval of the State Safety Manager.

b. Pellets, BBs, magnum and armor piercing rounds are prohibited.

c. Dry sweeping of the range is prohibited.

d. Trick shooting including, quick draw and hip shooting is prohibited.

e. Storage of any item in the range is prohibited.

f. Smoking and consumption of food or beverages is prohibited.

g. Proper hearing and eye protection shall be worn during firing.

h. Civic groups with individuals under 18 years of age are required to have written permission from the ARNG State Safety Manager prior to firing.

i. Personnel shall not be allowed in the observation/plenum area during firing.

9. **Mandatory Signs.** As a minimum the following signs shall be posted on the door/entrance to the range or inside as appropriate:

a. Inside the Range.

(1) Eating, drinking and/or smoking are prohibited.

(2) Dry sweeping is prohibited.

(3) Wash hands and face immediately after firing.

(4) Hearing protection shall be worn during firing.

(5) Safety glasses/goggles shall be worn during firing.

(6) Storage of furniture and other items is prohibited.

(7) The following ammunition is authorized for this range: _____, _____, _____, and _____.

b. On the Door to the Range.

(1) Noise Hazardous Area.

(2) Danger Lead Hazard Area.

(3) Pregnant women are not permitted in this area.

10. **Authorized Use of the Range.** Utilization of the _____ Armory range is authorized for organizations of the _____ Army National Guard conducting unit training and for the marksmanship team conducting competition or in preparation for competition. Non-Military personnel are subject to the same requirements and regulations as National Guard personnel and shall be in strict compliance with this SOP, Army Regulations, ARNG regulations and applicable subject letters and directives from the Adjutant General, State of _____.

11. **Release of Liability.**

a. The military Range Control Officer shall obtain a signed Release of Liability (**Appendix D of this SOP**) form from each civilian user of the range. Signed agreements shall be kept on file with the Commander of the facility.

b. Organizations with members who are minors shall obtain Permission and Release of Liability (**Appendix D** of this SOP) form signed by a parent or guardian. **The ARNG State Safety Manager shall be notified prior to minors firing on ARNG ranges.**

12. **Denial of Range Access.** The Commander of the facility may withdraw range privileges from any person or organization that willfully disobeys rules and regulations pertaining to range operations. In addition, range privileges may be denied to an individual whose knowledge of the principles of marksmanship is deficient to the degree of posing a safety hazard.

FOR THE COMMANDER:

John Doe
CPT, IN, ___ARNG
OIC/Armory Commander

APPENDIX A
ABBREVIATIONS

ANSI
American National Standards Institute

AR
Army Regulation

ARNG
Army National Guard

CFM
Cubic feet per minute

CFR
Code of Federal Regulations

CNGB
Chief, National Guard Bureau

DA
Department of the Army

FPM
Feet Per Minute

HEPA
High Efficiency Particulate Air

IAW
In Accordance With

IFR
Indoor Firing Range

mg/m^3
Milligrams per cubic meter

NIOSH
National Institute for Occupational Safety and Health

NGB
National Guard Bureau

OSHA
Occupational Safety and Health Administration

SOP
Standing Operating Procedure

SP
Static pressure

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

wg
Inches of water gauge

APPENDIX B
REFERENCES

ACGIH 22nd Ed, Industrial Ventilation
A Manual of Recommended Practice

Army Regulation (AR) 11-34
The Army Respiratory Protection Program

AR 40-5
Preventive Medicine

AR 350-41
Army Forces Training

AR 385-63
Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat

AR 385-64
U.S. Army Explosives Safety Program

Army National Guard (ARNG) Design Guide (DG) 415-1
Design Guide for Armories

American National Standards Institute (ANSI) Z87.1-1999
Practice for Occupational and Educational Eye and Face Protection

CEHND 1110-1-18
USACE (U.S. Army Corp of Engineers) Design Manual for Indoor Firing Range

Department of the Army Pamphlet (DA PAM) 385-64
U.S. Army Explosives Safety Program

DA PAM 40-501
Hearing Conservation

DA PAM 710-2-1
Using Unit Supply System (Manual Procedures)

Department of Defense Instruction (DODI) 6055.1
Department of Defense Occupational Safety and Health (OSH) Program

DHEW NIOSH 76-130
Lead Exposure and Design Considerations for Indoor Firing Ranges

FM 25-7
Training Ranges

National Guard Regulation (NGR) 385-10
Army National Guard Safety and Occupational Health Program

NGR 415-5
Military Construction Army National Guard (MCARNG) Project Development

APPENDIX B (Continued)

GR 420-10
Operations/Maintenance and Minor Construction, Army National Guard

Technical Bulletin Medical (TB MED) 502
Occupational and Environmental Health, Respiratory Protection Program

TB MED 506
Occupational and Environmental Health, Occupational Vision

TG 206
USACHPPM Technical Guide for Indoor Firing Ranges

Title 29, Code of Federal Regulations (CFR) Revision, Part 1910
Occupational Safety and health Standards

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APPENDIX C
INDOOR FIRING RANGE ACCIDENT RESPONSE PLAN

1. If a mishap or injury occurs at any time during the conduct of range operations, the following procedures shall be followed:

a. The OIC/NCOIC or person in charge of the range shall order a cease-fire immediately. **All weapons shall be cleared and muzzles pointed downrange.**

b. Render first aid to the injured as appropriate.

c. The OIC/NCOIC or person in charge of the range shall direct an individual to telephone and/or radio for medical assistance. **The primary telephone to be used in case of an emergency is located _____. The emergency numbers are _____.**

d. A person shall be stationed at the main entrance of the range to provide direction to emergency medical personnel.

e. After all injured personnel have been removed or attended to:

(1) The OIC/NCOIC shall notify the RCO of the mishap.

(2) The RCO shall in-turn notify the office of the Adjutant General at OSN _____, or the duty officer, and the State Safety and Occupational Health Office at DSN _____.

f. The RCO, with the assistance of the State Safety Manager, shall investigate the mishap and file a OA Form 285 "Accident Investigation" as appropriate.

2. All injuries or mishaps shall be reported to the RCO as soon as possible. The OIC/NCOIC shall be responsible to obtain witness statements and assist in making reports as may be required.

APPENDIX D
PERMISSION AND RELEASE OF LIABILITY CERTIFICATE

_____ ARNG
Somewhere, USA
Date: _____

BE IT KNOWN TO ALL: WHEREBY I, _____;
Have been granted permission to use firearms on the indoor firing range located at the _____ Army National Guard Armory; and whereas I am doing so entirely upon my own initiative, risk, and responsibility; now therefore, in consideration of the permission extended to me by the United States Government and/or State of ____ through their officers and agents do hereby for myself, heirs, executors and administrators, remiss, release and forever discharge the Government of the United States and the State of ____, the ____ Army National Guard, their officers, agents, employees expressly including the Adjutant General of the State of ____, acting officially or otherwise, from any and all claims, demands, action, or causes of action on account of my death, or account of injury to me or my property which may occur from any cause during the period of the above granted permission. I further acknowledge and certify by my signature below that I have read and understand the applicable range facility standing operating procedure (SOP) and shall comply with it and all applicable safety regulations.

Signature: _____

Witness to Signature: _____

In case of emergency, please contact:

Name _____
Address _____
_____
Telephone Number _____

TO BE SIGNED BY THE PARENT OR GUARDIAN OF INDIVIDUALS UNDER 18 YEARS OF AGE. NO MINOR SHALL BE ALLOWED TO UTILIZE AN ARNG FIRING RANGE WITHOUT PARENT OR GUARDIAN SIGNATURE.

I, said parent, and/or legal guardian of the above-named minor, hereby give my consent to said minor executing this release, and do hereby also release and agree to save harmless the parties above-named as to said minor and as to myself as an individual, and for our heirs, executors, administrators and assigns.

Signature of Parent or Guardian: _____

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ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose
1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References
Related publications are listed below.
a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
b. AR 11-34 (The Army Respiratory Protection Program).
c. AR 40-5 (Preventive Medicine).
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII.
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 5th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/Items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ **(PREFERRED METHOD)**- Pre moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

[redacted]

(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminsted Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually. this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64078 (GN-4)
c. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-5628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-3381M

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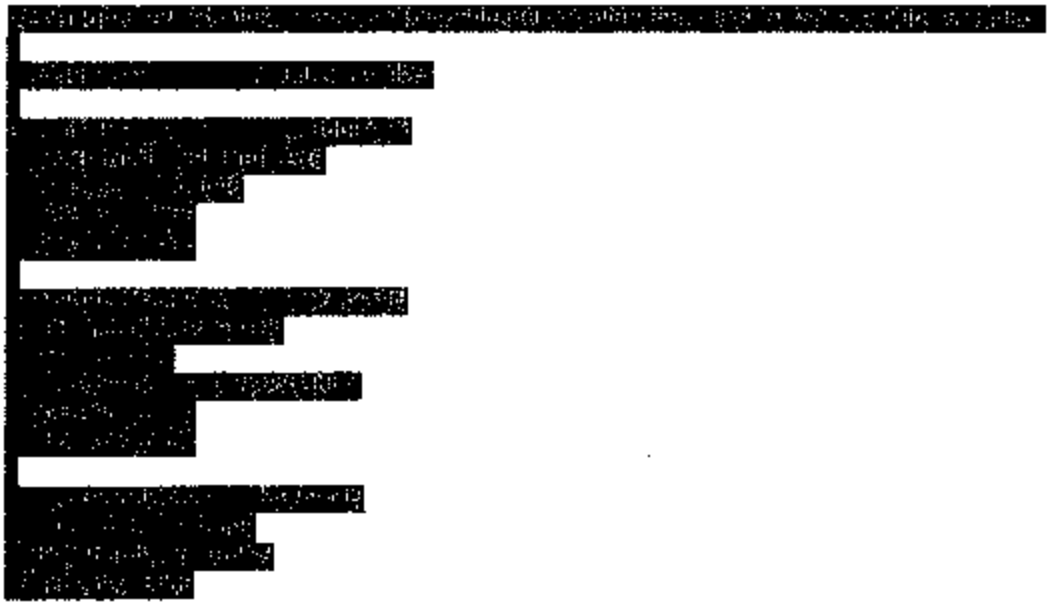
APPENDIX E (Continued)

800-247-6628
800-359-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472



E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75 \text{ ug}}{100 \text{ cm}^2} \quad \frac{929 \text{ cm}^2}{1 \text{ sq ft}}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 \text{ug/sq ft}$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft – Square foot

APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address		Point of Contact *(name & phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation		Date Collected	Date Shipped
Analysis Desired			
Sampling Data			

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	___ Persons Exposed	___ Hrs/Day	Method of Collection
Analysis Desired			
Sampling Data			

Sample No.								
Pump No.								B
Time On								L
Time Off								A
Total Time (min)								N
Flow Rate (LPM)								K
Volume (liters)								
GA/GZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer

Comments to Lab:

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

COMPLIANCE MANAGEMENT INTERNATIONAL

1215 Manor Drive, Suite 205
Mechanicsburg, PA 17055
Phone: 717.590.7031
Fax: 717.590.7936
www.complianceplace.com

Industrial Hygiene Survey Report

National Guard Facility
Riverdale Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Riverdale Readiness Center** **107 Newark-Pompton Turnpike** **Riverdale, NJ, 07457**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**March 19, 2013**
Report Date:	**April 22, 2013**

Non-Responsive

Manager, Industrial Hygiene Services

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on March 19, 2013, at the Riverdale Readiness Center located at 107 Newark-Pompton Pike, Riverdale NJ 07457. The survey was performed by Mr. Non-Responsive.

1. Lead bulk, surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in two locations. See Section 3.0 for details.

2. Lighting levels did not meet the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in four locations. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. The relative humidity level was below the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in all locations.

    b. Temperature levels met the ASHRAE recommended guideline of 68-79 degrees F.

    c. Carbon dioxide levels exceeded the recommended ceiling of 997 ppm in one area.

    See Section 5.0 for detailed sampling results

4. Water-stained ceiling tiles and active leaks were observed in the facility. See Section 5.0 for details.

Section 2.0 Operation Description & Observations

The Riverdale Readiness Center is mainly an administrative facility with a drill hall, offices and classrooms, and converted firing range area. There were approximately 11 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1880s. It is a two-story structure. The exterior is brick. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, carpet, and 9" x 9" and 12" x 12" floor tile. A detached decommissioned FMS building is on the property. It was recently used as living quarters for ARNG personnel during hurricane Sandy.

The Heating, Ventilation, and Air-Conditioning (HVAC) system consists of a natural gas-fired forced hot water furnace for heat. There are two rooftop A/C units for administrative area offices.

There is no child-care facility in the building.

Overall housekeeping practices were adequate.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared properly designed. Personnel had supportive chairs.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Air ug/m^3	Surface ug/ft^2
1	SFC Rios's Office	<6.3	*
2	Drill Hall	<6.3	*
3	Blank	<3	*
4	Drill Hall Floor Center	*	<110
5	Drill Hall Heater	*	<110
6	Drill Hall Amnesty Box	*	120
7	Converted Firing Range Floor	*	**830**
8	Converted Firing Range Contents	*****	<110
9	Converted Firing Range Outside Entrance	*****	**480**
10	Kitchen Frig	*	<110
11	Day Room TV	*****	<110
12	Recruiting Office Shelf	*	<110
13	Copy Room Shelf	*	<110
14	OPNS Office Window Sill	*	<110
15	Lobby Heater	*	<110
16	Upstairs Locker Office	*	<110
17	Conference Room Floor	*	<110
18	Exercise Room Electrical Box	*	110
19	Supply Room Desk	*	<110
20	War Room Cabinet	*	170
-	**Criteria**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following locations:

    - Converted Firing Range - Floor
    - Converted Firing Range – Outside Entrance

    Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of 200 ug/ft^2.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Boiler Room	30.2	30	Yes
Boiler Room Hall	11.2	5	Yes
Storage Room Bulk	20.3	10	Yes
Men's Toilet	57.5	5	Yes
Drill Hall	17.6	10	Yes
Lobby	70.8	10	Yes
Food Services Prep	**22.1**	**50**	**No**
Food Services Storage	**0.0**	**5**	**No**
War Room Office	**26.3**	**30-50**	**No**
Storage Room Bulk	15.3	10	Yes
Exercise Room	**14.3**	**30**	**No**
Recruiting Corridor	18.2	5	Yes
Women's Toilet	80.1	5	Yes
Classroom	54.8	30-50	Yes
Recruiting Breakroom	42.6	10	Yes
Recruiting Lounge	54.7	10	Yes
Recruiting Office	71.1	30-50	Yes
Battalion HQ Corridor	23.1	5	Yes
S-1 Office	95.1	30-50	Yes
Copy Room	42.7	10	Yes
BN S-3	70.7	30-50	Yes
B-BNCDR Office	60.5	30-50	Yes
ORNS Office	58.9	30-50	Yes
Conference Meeting	40.1	30	Yes
BN XO Office	71.3	30-50	Yes
BN S-2 Office	62.2	30-50	Yes
S-2 Office	73.7	30-50	Yes
Classroom 1	59.1	30-50	Yes
Locker Office	74.0	30-50	Yes
Computer Room	38.2	30-50	Yes
Conference Room Meeting	76.6	30	Yes
CDR Office	31.1	30-50	Yes
SFC [redacted] Office	70.1	30-50	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guideline in the food services prep and food services storage areas, war room, and exercise room. Lighting should be improved in these areas.

Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature and relative humidity ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (◦F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	43.1	54.7	297	0.8
Recruiting Office	71.2	**25.5**	795	0.0
S-1 Office	76.6	**25.2**	**1,031**	0.0
BN S-3	76.8	**22.0**	991	0.0
Criteria	**68-79**	**30-60**	**<997**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements met the recommended 68-79°F in occupied areas. Relative humidity levels were below the recommended guidelines in all sampled areas. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction of outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level for this survey. For this survey, carbon dioxide levels exceeded the recommended ceiling of 997 ppm in the S-1 office. This is an indication that outdoor air ventilation is not adequate. Outdoor air ventilation should be increased in the area.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide.

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observation was noted:

    - Water-stained ceiling tiles and active leaks were observed in the facility. All sources of water infiltration should be identified and repaired. Water stained ceiling tile should be removed and replaced.

Section 6.0 Suspect Asbestos Containing Building Materials

The following suspect asbestos containing material (ACM) was noted at the time of this survey:

1. Suspect ACM insulation on the boiler breeching was observed. The material was intact and in good condition.

2. Several areas have 9”x9” suspect ACM floor tiles. The flooring was intact and in good condition.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	3/19/13	2.82 LPM
SKC Air Sampling Pump	647610	3/19/13	2.84 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

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:**	3KNJ IH Survey	**Chain Of Custody:**	515377
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Riverdale	**Date Submitted:**	3/22/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	3/29/2013 **Report Date:** 3/29/2013

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
13046638	1	Flame	Air	479	N/A	6.3	ug/m^3	<3	<6.3	ug/m^3	
13046639	2	Flame	Air	491	N/A	6.1	ug/m^3	<3	<6.1	ug/m^3	
13046640	3	Flame	Air Blank	0	N/A	3	ug/m^3		<3	ug	
13046641	4	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046642	5	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046643	6	Flame	Wipe	****	0.108	110	ug/ft^2	13	120	ug/ft^2	
13046644	7	Flame	Wipe	****	0.108	110	ug/ft^2	89	830	ug/ft^2	
13046645	8	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046646	9	Flame	Wipe	****	0.108	110	ug/ft^2	52	480	ug/ft^2	
13046647	10	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046648	11	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046649	12	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046650	13	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046651	14	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046652	15	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046653	16	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046654	17	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13046655	18	Flame	Wipe	****	0.108	110	ug/ft^2	12	110	ug/ft^2	
13046656	19	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	

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Client:	National Guard Bureau	**Job Name:**	3KNJ IH Survey	**Chain Of Custody:**	515377
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Riverdale	**Date Submitted:**	3/22/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	3/29/2013 **Report Date:** 3/29/2013

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
13046657	20	Flame	Wipe	****	0.108	110	ug/ft²	18	170	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

159202

515377

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)

1 of 2

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. 3KNJ IH Survey
2. Riverdale
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Pers [redacted]
5. [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:

☐ Immediate ☐ 3 Day
~~☒~~ Next Day ~~☐~~ 5 Day +
☐ 2 Day Date Due: 3/29/13

☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Incl[redacted] with Report
☒ [redacted] complianceplace.com
☐ Fax: [redacted] us.army.mil
☐ 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)

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

☐ Pb Paint Chip (QTY)
☒ Pb Dust Wipe (wipe type GHOST) 17 (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)

Microbial 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 Identification

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
1	RIOS Off	3/19/13	479					X								
2	Drill Hall		491					X								
3	Blank		—					X								
4	Drill Hall FLOOR CFR			100cm²				X								
5	Drill Hall Heater							X								
6	Drill Hall Amnesty Box							X								
7	CFR FLOOR							X								
8	CFR Contents							X								
9	CFR OUTSIDE ENT							X								
10	KITCHEN FRIG							X								
11	DAY Room TV							X								
12	Recruiting Off shelf							X								

cot 3/23/12
EXP 9/15

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time: Contact: By:

Date/Time: Contact: By:

Date/Time: Contact: By:

1. Date/Time RCVD: 3/22/13 @ 1000 Via: FEDEX By (Print): [redacted] Sign:
2. Date/Time Analyzed: / / @ By (Print): Via: Date: / / Time: Initials:
3. Results Reported To:
4. Comments: 7945035 1219

LABORATORY STAFF ONLY: (CUSTODY)

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) 515377

2 of 2

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

Submittal Information:
1. Job Name: 3KNJ
2. Job Location: Riverdale
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Shirley Chapman/Ken Forsythe @ phone # (410) 942-0273
5. Sampled 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:

TURNAROUND (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 Non-Responsive [redacted]
☒ [redacted]
☐ Fa[redacted]
☐ Ve[redacted]

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) 17 (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)

Lot 3/23/12
EXP 9/15

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
13	Copy Rm Bookshelf	3/19/13		100cm²				✓								
14	OPNS Office W-Sill	|		|				✓								
15	Lobby Heater	|		|				✓								
16	Upstairs Locker Top	|		|				✓								
17	Conference Rm Floor	|		|				✓								
18	Exercise Rm Elect Box	|		|				✓								
19	Supply Room Desk	|		|				✓								
20	War Room Cabinet							✓								

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:

Appendix B. Photographs

Riverdale Armory Front

Boiler Room SACM Breeching

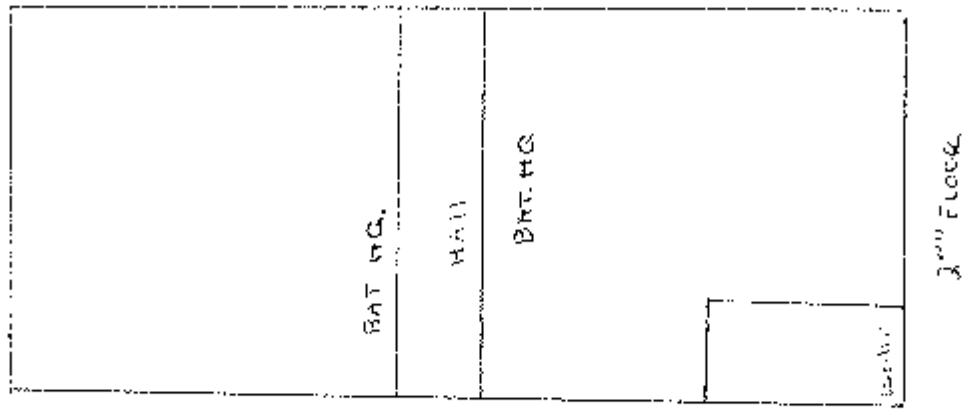
Water Stained Ceiling Tiles

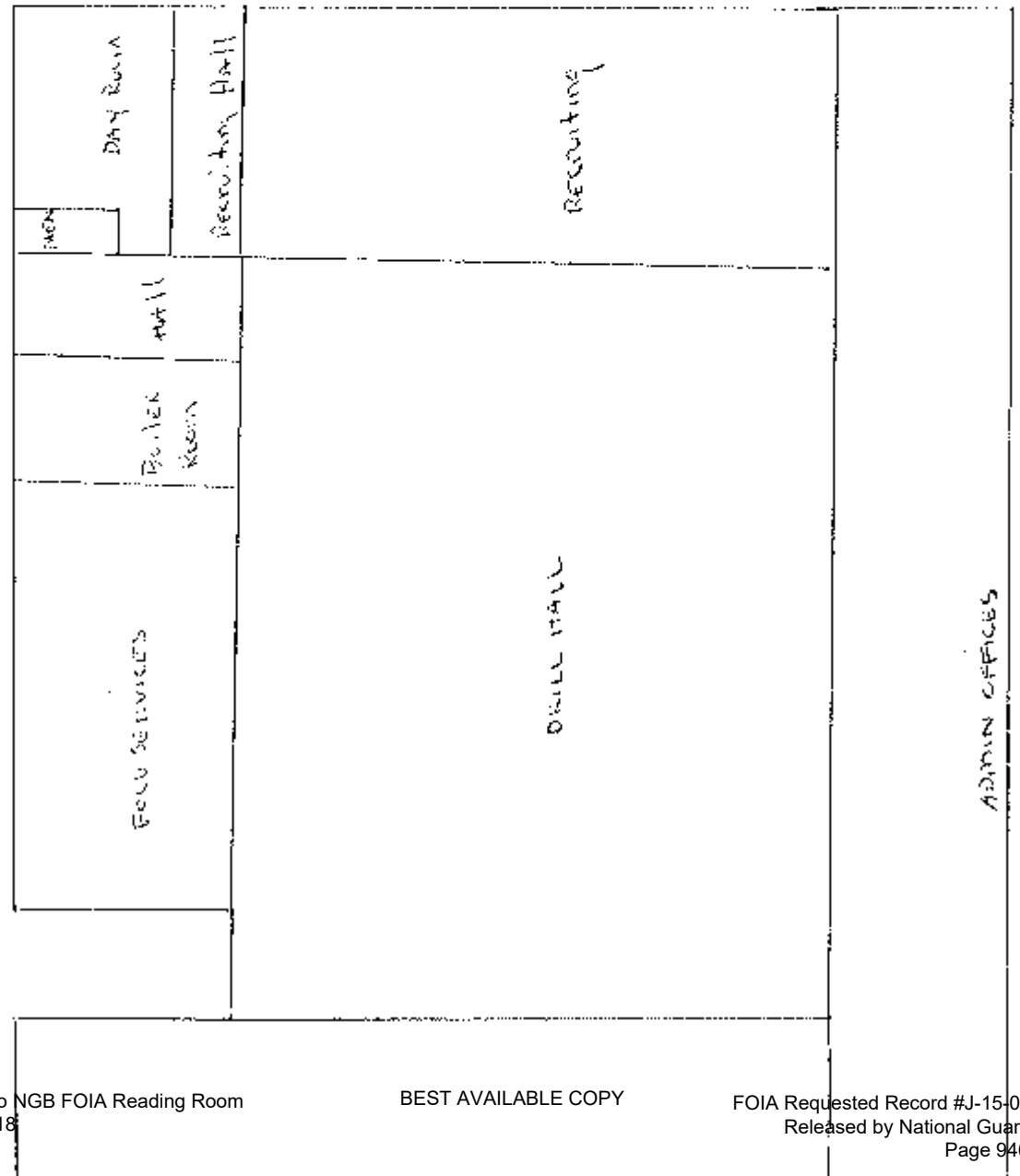
Active Water Leak

Detached Decommissioned FMS Building

Drill Hall

Appendix C. Floor Plan





Riverdale
3/19/13

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition

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

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

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h)(3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM)

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 NOV 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Jersey 03079

FINAL
INDUSTRIAL HYGIENE SURVEY REPORT
SEAGIRT ARMORY
SEAGIRT, NEW JERSEY

October 2006
PN: 39741509

Non-Responsive
Office Manager

Non-Responsive
Project Manager

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TABLE OF CONTENTS

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Section **Page**

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Computer work stations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (DoD, OSHA General Duty)	RAC 3
Lighting		
On the day of the survey, the illuminance in the administrative area was inadequate.	Increase illumination through use of task lighting. (ANSI / IESNA RP-1-04)	RAC 4
Lead		
Lead was detected in wipe samples collected from the firing range in amounts greater than 200 $\mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the areas where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025(h)(1))	RAC 3
Hazard Communication		
Material safety data sheets were not available on site. MSDS's were located in a separate building.	Employers shall have a material safety data sheet in the workplace for each hazardous chemical which they use (OSHA 29 CFR 1910.1200 (g)(1)).	RAC 4

1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Seagirt Armory located in Seagirt, New Jersey. This report includes an executive summary and a description of the site activities and findings and a list of conclusions and recommendations.

On March 16, 2004, Mr. Non-Responsive an industrial hygienist with URS, conducted a site visit to the Armory in Seagirt, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Armorer Non-Responsive of the New Jersey ARNG was Mr. Non-Responsive site contact for this survey.

This armory is a one-story brick building, with an attached drill hall that is constructed primarily of brick and mortar. This facility is built on a concrete slab, with a pitched asphalt roof. The building was constructed in 1979. A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Some computer workstation chairs could not be adjusted for height, the armrests were in a fixed position and keyboards in offices could not be adjusted. Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person. No complaints were received by URS concerning workstations at the time of this survey.

Roof leaks were observed in the supply room hall during this survey.

2.2 Chemical and Physical Agents Sampled

On the day of the survey, relative humidity, carbon dioxide and carbon monoxide measurements were made in Office #4, the drill floor, supply room, boiler room and outside. These readings were all measured using a TSI Q-Trak ™ (Model 8551).

2.2.1 Relative Humidity

Relative humidity on the day of the survey ranged from 25.1-25.4 % throughout the various building areas with an average of 25.26%. The average reading was below the recommended maximum level of 65% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

2.2.2 Carbon Dioxide

Carbon dioxide concentrations ranged from 429 to 548 parts per million (ppm), with an average of 491 ppm. The outside reading was 356 ppm.

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is

people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. Given a background level of 356 ppm on the day of the survey, the ASHRAE limit would be 1,056 ppm.

2.2.3 Carbon Monoxide

Carbon monoxide concentrations remained below detectable limits on the day of the survey. ASHRAE (62.1-2004) recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments may include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion.

2.2.4 Lighting

Lighting in the administrative areas was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Lighting Footcandles	Recommended Lighting Footcandles
Office 4	Office	70	50
Office 6	Office	92	50
Hall Outside Office 6	Hall	40	30
Drill Floor Center	Drill Floor	15	30
Classroom	Classroom	56	50
Showers	Restroom	36	50
Break Room	Break Room	39	50
Firing Range Center	Firing Range	16	50
Supply Room	Storage	32	50
Office # 1	Office	44	50
Copier Room	Office	34	50

Lighting was inadequate in several building areas.

2.2.5 Lead

Wipe testing for lead dust was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 2-2 below shows the results of the lead sampling.

Table 2-2
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
Outside Boiler Room-Floor	0316-03	0.108	140	200
Blank	0316-06	N/A	8.4*	N/A

*Blank reported in $\mu g/ft^2$

Sample numbers and locations can be found on the site map in Appendix A.

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

ERGONOMICS: The ergonomic issues were minor with the desks, chairs and monitors and need to be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey the illumination in the administrative area was inadequate in many offices and generally throughout the facility. URS recommends increasing the area lighting or supplement task lighting for each workstation in the administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

ASBESTOS: Floor tile that was present throughout this building area was assumed to contain asbestos in a concentration greater than one percent but was in good condition.

HAZARD COMMUNICATION: Listed containers of paints and thinners were observed in the janitor's closet with MSDS forms found in building 59 on site.

3.0 INDOOR FIRING RANGE

3.1 Operation Description

The site has an indoor firing range which is currently not being used.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the indoor firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1
Levels of Lead Dust Found in the Indoor Firing Range

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
Firing Range-Bullet Trap Floor	0316-04	0.108	360,000	200
Firing Range-Floor – Center	0316-05	0.108	6,000	200
Blank	0316-06	N/A	8.4*	N/A

*Blank reported in $\mu g/ft^2$

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: Both wipe samples collected for the presence of lead were found to contain lead at a level above the 200 microgram per square foot recommended maximum surface lead contamination. This level established by the NGB Region North Industrial Hygiene Office is explained in Appendix G. Guidelines for the clean-up and rehabilitation of indoor firing ranges is provided in Appendix H.

4.0 DRILL HALL

4.1 Operation Description

The attached drill hall is a five thousand square foot room with a ceiling height of approximately twenty-five feet. This area is currently used for drill exercises and assemblies.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1
Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
Drill Hall- Floor Outside Office #3	0316-01	0.108	24	200
Drill Hall-Floor Near foyer # 2	0316-02	0.108	20	200
Blank	0316-06	N/A	8.4*	N/A

*Blank reported in $\mu g/ft^2$

Sample numbers and locations can be found on the site map in Appendix A.

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: Wipe samples collected from the drill hall for lead were below 200 micrograms per square foot. The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

5.0 BOILER ROOM

5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

5.2 Chemical and Physical Agents Sampled

5.2.1 Asbestos

Four samples of suspect asbestos-containing materials were collected from the boiler breeching and tank insulation and were submitted to AMA for analysis. None of the samples were found to contain asbestos. The laboratory report from AMA is contained in Appendix D.

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

Not applicable to this operation.

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

6.4 Hazard Communication

A program was found regarding hazard communication. Training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

APPENDIX A

ARMORY DRAWING

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URS

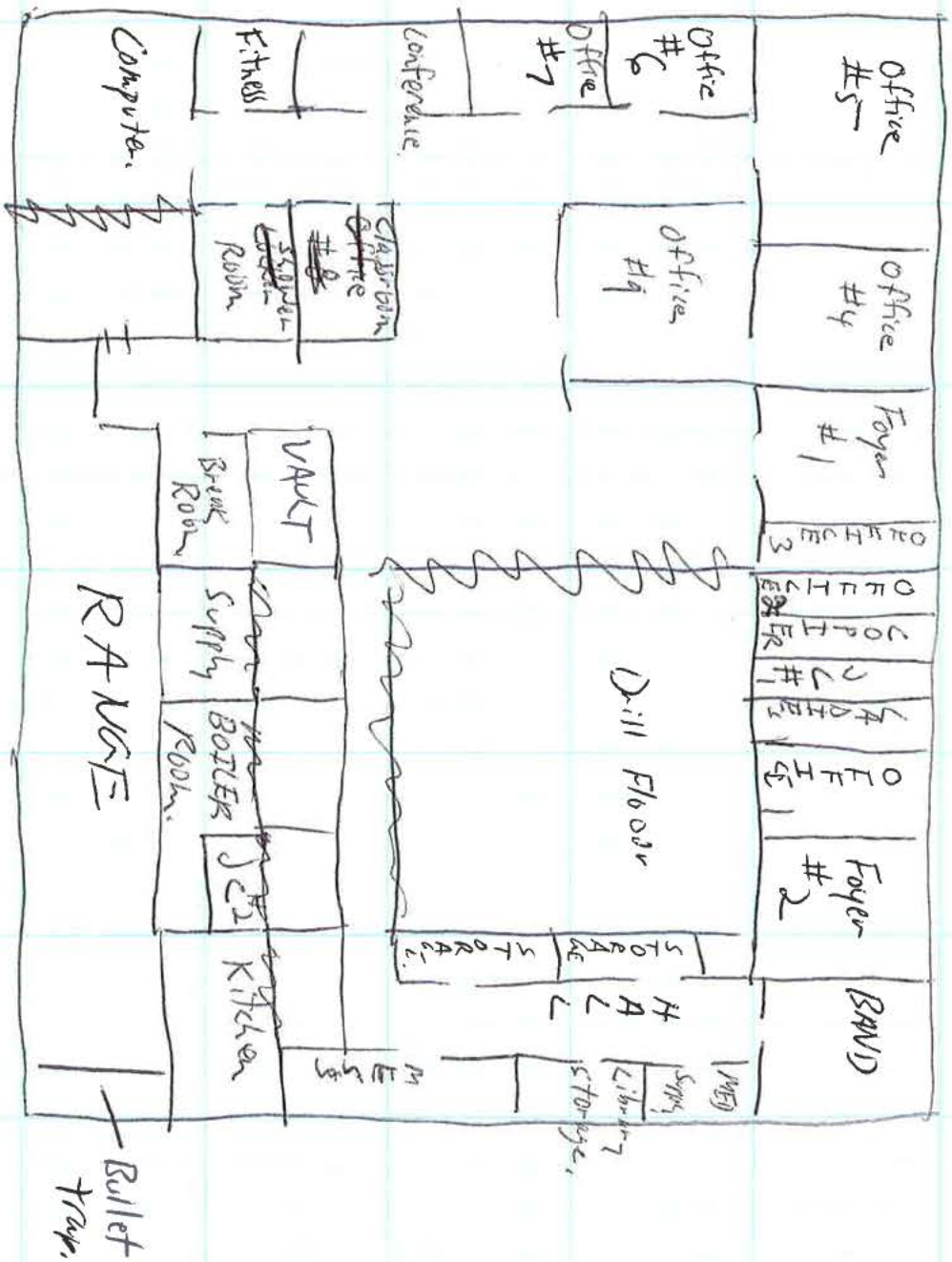
Page ____ of ____

Job _____ Project No. _____ Sheet ____ of ____

Description _____ Computed by _____ Date _____

_____ Checked by _____ Date _____

Reference



APPENDIX B

PERSONNEL LIST

NOT PROVIDED

APPENDIX C

HAZARDOUS MATERIALS LIST

NOT PROVIDED

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APPENDIX D

ANALYTICAL RESULTS

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128488
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation, Havre de Grace, Maryland 21078	**Job Location:**	Sea Grit, NJ	**Date Analyzed:**	07/01/2004
		Job Number:	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	01-Jul-04
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
0449221	0316-01	Furnace	Wipe	****	0.108	2.79 ug/ft²	24 ug/ft²	
0449222	0316-02	Furnace	Wipe	****	0.108	13.94 ug/ft²	20 ug/ft²	
0449223	0316-03	Furnace	Wipe	****	0.108	13.94 ug/ft²	140 ug/ft²	
0449224	0316-04	Flame	Wipe	****	0.108	111.52 ug/ft²	360000 ug/ft²	
0449225	0316-05	Flame	Wipe	****	0.108	111.52 ug/ft²	6000 ug/ft²	
0449226	0316-06	Furnace	Wipe	****	0.108	2.79 ug/ft²	8.4 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 results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] Non-Responsive   Technical Manager: [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, NIST, or any agency of the Federal Government.

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

NVLAP NY ELAP AIHA

CERTIFICATE OF ANALYSIS

Client: National Guard Bureau
Address: 301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation, Havre de Grace, Maryland 21078
Attention: [redacted]

Job Name: Medical Facility Armory
Job Location: Sea Girt, NJ
Job Number: Not Provided
P.O. Number: BPA #W912K6-04-A0002

Chain Of Custody: 128458
Date Analyzed: 5/28/2004
Person Submitting: [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	Analyst ID	Comments
0448659	0316-19 A	NAD	–	–	–	–	30	--	–	–	–	70	Gray	CK	
0448660	0316-19 B	NAD	–	–	–	–	35	--	TR	–	–	65	Gray	CK	
0448661	0316-19 C	NAD	–	–	–	–	25	–	--	–	–	75	Gray	CK	
0448662	0316-20 A	NAD	–	–	–	–	30	–	TR	–	–	70	Gray	CK	

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"

[redacted]

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APPENDIX E

TRAINING CERTIFICATES

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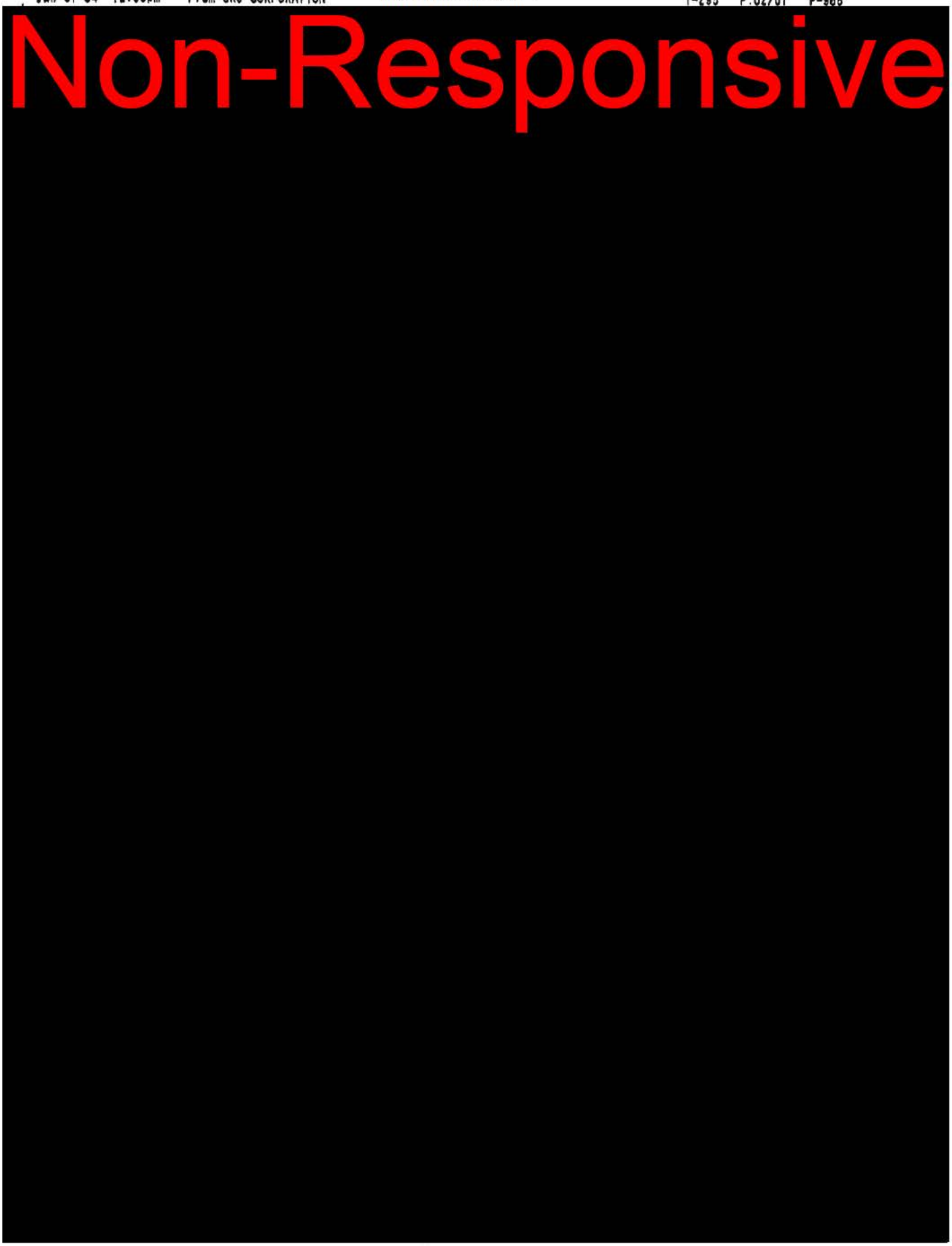
Non-Responsive

Certificate of Training

[redacted]

For successful completion of an 8 Hour, 1 Day

Asbestos Inspector & Management Planner
Annual Refresher Training
MARCH 25, 2003

This training was approved and given in accordance with Regulations for Connecticut State Agencies RCSA 20-440 - 1-9 and RCSA 20-441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94

Presented by

Mystic Air Quality Consultants, Inc.
1204 North Road, Groton, CT 06340 (800) 247-7746

[redacted] PR10543 **Exam Grade: 100%** **Exam Date: 03/25/2003** [redacted] **03/25/2004**

CSP, RS *ining Director*

APPENDIX F

PHOTOGRAPHS

Photo 0701: Drill Hall

Photo 0708: Former Indoor Firing Range

Photo 0717: Supply Hall – Evidence of roof leaks

Photo 0720: Office #4 – Computer workstation with poor ergonomics

APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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. 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.

APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose

1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References

Related publications are listed below.

a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
b. AR 11-34 (The Army Respiratory Protection Program).
c. AR 40-5 (Preventive Medicine).
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII.
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 5th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ (**PREFERRED METHOD**)- Pre moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

(c) Eleven (11) centimeter (cm) diameter Whatman #41 paper

(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment

For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (If necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping

This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance

The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

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b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-3381IM

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APPENDIX E (Continued)

800-247-6628
800-359-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472

[redacted]

E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

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APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{\frac{75\ ug}{100\ cm^2}}{\frac{929\ cm^2}{1\ sq\ ft}}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 ug/sq\ ft$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft – Square foot

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APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address	Point of Contact *(name & phone #)*
	Samples Collected By

Sampled Facility	City	State	Location *(bldg/area)*

Description of Operation	Date Collected	Date Shipped

Analysis Desired

Sampling Data

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

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APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	___ Persons Exposed	___ Hrs/Day	Method of Collection
Analysis Desired			

Sampling Data

Sample No.								
Pump No.								B
Time On								L
Time Off								A
Total Time (min)								N
Flow Rate (LPM)								K
Volume (liters)								
GA/BZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer
Comments to Lab:		

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

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APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

1215 Manor Drive, Suite 205
Mechanicsburg, PA 17055
Phone: 717.590.7031
Fax: 717.590.7936
www.complianceplace.com

Industrial Hygiene Survey Report

National Guard Facility
Sea Girt Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Sea Girt Readiness Center** **Building 35** **Sea Girt, NJ 08750**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**February 6, 2013**
Report Date:	**March 31, 2013**

Non-Responsive

Manager, Industrial Hygiene Services

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on February 6, 2013, at the Sea Girt Readiness Center located at 100 Sea Girt Avenue, (Building 35) Sea Girt, NJ 08750. The survey was performed by Mr. Non-Responsive.

1. Bulk, surface and air samples for lead were collected. All sample results were less than regulatory standards and/or recommended guidelines. See Section 3.0 for detailed findings.

2. Lighting levels met the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in all areas tested. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Relative humidity levels were less than the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in indoor locations evaluated.

    b. Carbon dioxide, carbon monoxide, and temperature levels measured were within recommended guidelines.

    See Section 5.0 for detailed findings.

4. Roof/building damage is present due to Hurricane Sandy. Current water infiltration is present which could provide an environment suitable for microbial growth and proliferation. Complaints/concerns about indoor air quality could continue to occur if sources of water infiltration are not properly repaired and the building is not properly dried out. See Section 5.0 for detailed findings

5. Suspected asbestos containing materials were found to be intact and in good condition. See Section 6.0 for detailed findings.

Section 2.0 Operation Description & Observations

The Sea Girt Readiness Center is mainly an administrative facility with a drill hall, offices, classroom, and converted firing range/storage areas. There were approximately 15 full-time employees stationed at this facility at the time of this survey.

The building was initially constructed in 1975. The building is one story with a brick exterior. The interior walls are concrete block, metal or drywall. The floors are concrete, 12" X 12" vinyl floor tile or carpet.

The Heating, Ventilation, and Air-Conditioning (HVAC) system consists of an oil-fired forced air furnace for heat and roof top units for air conditioning.

This facility sustained damage from Hurricane Sandy. Portions of the roof were severely damaged.

The area of the building that was once an indoor firing range has been converted into a storage area. No firing range components remain.

There is no child-care facility in the building.

Overall housekeeping practices were adequate.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared properly designed. Personnel had supportive chairs.

Sgt. Non-Responsive and Sgt. Non-Responsive from the Army National Guard Safety office were onsite during the survey.

Section 3.0 Lead Testing

Due to the age of the building there is a potential for lead based paint to be present. Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Bulk (%)	Air ug/m^3	Surface ug/ft^2
1	Drill Hall	*	<5.1	*
2	Converted Firing Range/Storage	*	<5.1	*
3	Drill Hall - Floor	*	*	<110
4	Drill Hall – Top of AED Station	*	*	<110
5	Drill Hall – Top of T.V. Stand	*	*	<110
6	Kitchen – Metal Shelf	*	*	<110
7	Kitchen – Top of Microwave	*	*	<110
8	Converted Firing Range/Storage Area – Floor	*	*	<110
9	Converted Firing Range/Storage Area – Top of File Cabinet	*	*	<110
10	Converted Firing Range/Storage Area – Top of Wall Locker	*	*	<110
11	Converted Firing Range/Storage Area – HCAC Supply Diffuser	*	*	<110
12	Stair Landing Outside the Converted Firing Range/Storage Area - Floor	*	*	<110
13	Distributed learning Area – Top of Desk	*	*	<110
14	Distributed Learning Area – Top of Desk	*	*	<110
15	Recruiting Office – Top of Printer	*	*	<110
16	RSP Office – Top of UV Supply Grill	*	*	<110
17	Army Band Room – Top of Book Shelf	*	*	<110
18	Dining Room – Top of Refrigerator	*	*	<110
19	Caged Supply Area – Metal Shelf	*	*	<110
20	Blank - Wipe	*	*	<12 ug
21	Blank - Air	*	<3 ug	*
22	Bulk Paint Chip Drill Hall - Floor	<0.0071	*	*
23	Bulk Paint Chip Converted Firing Range/ Storage – Floor	0.04	*	*
-	Criteria	0.5	50	200

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. Occupational Safety and Health Administration (OSHA) 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead bulk, surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were below the recommended guideline of 200 ug/ft^2 all sampled locations.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

- Paint was observed to be peeling in the converted firing range/storage area floor and the drill hall floor. Bulk samples were collected and determined to contain concentrations from below the laboratory limit of detection to 0.04% lead (Pb). This is less than the EPA definition of lead based paint = 0.5%. However, all areas of peeling paint should be repaired.

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to American National Standards Institute (ANSI)/Illuminating Engineering Society of North America (IESNA) RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Dining Room	84.7	10	Yes
Kitchen	62.3	50	Yes
Copy Room	38.8	10	Yes
Capt. Marin Office	43.4	30-50	Yes
TOC Office	103.3	30-50	Yes
Drill Hall	31.1	10	Yes
Caged Supply Room	57.3	30	Yes
Recruiting Office	138.4	30-50	Yes
154th Water Company Office	80.1	30-50	Yes
S-1 Office	99.9	30-50	Yes
Staff Office	81.2	30-50	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Lighting levels met the minimum recommended guideline in all areas tested.

Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation using a QTRAK IAQ Meter, Model 8554 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (◦F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Dining Room	68.2	30.5	972	0.1
Copy Room	70.0	**21.8**	695	0.0
TOC Office	70.3	**19.5**	562	0.0
Caged Supply Room	70.5	**22.5**	656	0.0
154th Water Company	70.0	**22.8**	758	0.0
S-1 Office	70.9	**23.1**	762	0.0
Staff Office	72.1	**23.5**	787	0.0
Outdoors	44.2	**26.5**	307	0.0
Criteria	**68-79**	**30-60**	**<1,007**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Relative humidity levels were less than the recommended guideline of 30-60%. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels measured did not exceed the recommended ceiling of 1,007 parts per million (ppm). This indicates that outdoor air ventilation is adequate in indoor locations sampled.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm.

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observations were noted:

    - This facility sustained damage from Hurricane Sandy. Portions of the roof were severely damaged. Flooding has resulted in portions of the building remaining unoccupied.

    - Active water infiltration is still occurring in the building. A musty odor is present in the converted firing range/storage area, dining area, and the distributed learning area of the building. The building has not been properly dried out. Some building components are still wet or damp.

  All sources of water infiltration must be identified and repaired. Interior areas need to be properly dried out and remediated or there is the potential for indoor sources of microbial growth and proliferation.

Section 6.0 Suspect Asbestos Containing Building Materials

Based on the age of the building (e.g., constructed in 1975) asbestos-containing materials (ACM) could be present in the facility. The following suspect asbestos-containing materials were noted:

1. 12" x 12" vinyl floor tile located throughout the facility was reported to contain asbestos. This material was found to be intact and in good condition.

2. Approximately 20 linear feet of boiler and breeching insulation was observed in the boiler room. This material was observed to be intact and in good condition.

3. Two bulk samples were collected for asbestos analysis. These were:

    a. Pipe insulation in the boiler room that was damaged and in poor condition;
    b. Mudded joint fitting in the boiler room that was damaged and in poor condition.

    No asbestos was detected in these samples. See Laboratory Analysis Report Samples #24 and #25 for detailed sample results.

4. Inaccessible areas such as behind walls or crawlspaces were not inspected.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647610	2/6/2013	2.48 LPM
SKC Air Sampling Pump	647631	2/6/2013	2.49 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	Seagirt RC	**Chain Of Custody:**	515139
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	NJ	**Date Analyzed:**	2/18/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**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
13037412	24	NAD	--	--	--	--	--	--	80	--	--	20	PI	Brown	Homogeneous	SW	
13037413	25	NAD	--	--	--	--	30	--	--	--	--	70	Elbow	Gray	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 **Analyst(s)** Non-Responsive

OWI (410) 247-2024 159202 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) **515139**

1 of 3

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Sea Girt RC
2. Job Location: NJ
3. Job #: Non-Responsive [redacted] PO #: W912K6-09-A-0003
4. Contact Person: [redacted] @ phone #: (410) 942-0273
5. Submitted by: [redacted] Signature: Non-Responsive [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: 2/19/13
☐ Results Required By Noon (Every Attempt Will Be Made to Accomodate)

REPORT TO:
☒ In[redacted]with Report
☒ E[redacted] Non-Responsive ...Complianceplace.com
☐ Fa[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)

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) 18 (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)

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
1. Drill Hall	2-6	583					X								
2. Converted firing Range		585					X								
3. Drill Hall - floor			100 cm²				X								
4. Drill Hall - Top of AED-Box							X								
5. Drill Hall - Top of Tr. Stand							X								
6. Kitchen - metal shelf							X								
7 Kitchen - Top of microwave							X								
8 Converted Range - Floor							X								
9 Converted Range - File cabinet							X								
10 Converted Range - locker							X								
11 Converted Range - HVAC supply							X								
12 Floor outside of Range							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: 2/12/13 @ KXD Via: FedEX By (Print): JW Sign:
2. Date/Time Analyzed: 2/19/13 @ By (Print): Surat Watson Sign:
3. Results Reported To: Shirley Chapman Via: EMail Date: 2/19/13 Time: Initials: SW
4. Comments:

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OWI (410) 247-2024 159202 210 REV. 6.08

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)

2 of 3

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

Submittal Information:
1. Job Name: Sea Girt RC
2. Job Location: NJ
3. Job #: [redacted] W912K6-09-A-0003
4. Contact Person [redacted] @ phone # (410) 942-0273
5. Submitted by: [redacted] 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
- ☐ Next Day
- ☐ 2 Day
- ☐ 3 Day
- ☐ 5 Day +
- Date Due: ________
- ☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
- ☒ Inclu[redacted]h Report
- ☒ Ema[redacted] Complimentary place - Com
- ☐ Fax: [redacted]us.army.mil
- ☐ 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)

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________)________(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)
- ☐ Other (Specify____)____(QTY)
- ☐ Surface Vacuum Dust____(QTY)
- ☐ Culturable ID Genus (Media____)____(QTY)
- ☐ Culturable ID Species (Media____)____(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
13. Distributed Learning -	Desk	2-6		100 cm²				X								
14. S-1 Office -	Book shelf	↓		↓				X								
15. Recruiting Office -	Printer							X								
16. RSP - Office	UV. Supply							X								
17. Army Board	Rm. Book shelf							X								
18. Dining Rm.	Top of ~~Reg~~ Frig							X								
19. Cage Supply -	Shelf			↓				X								
20. Blank - wipe				0				X								
21. Blank - Air			0					X								
22. Drill Hall	Floor							X			X					
23 Converted Bay -	floor							X			X					
24. Boiler Room -	Pipe Insulation	↓					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:________

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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)

3 of 3

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Sea Girt RS
2. Job Location: NJ
3. Job #: PO #: W912K6-09-A-0003
4. Contact Perso[redacted] @ phone # (410) 942-0273
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 ☐ Next Day ☐ 2 Day ☐ 3 Day ☐ 5 Day + Date Due:
☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Includ[redacted] with Report
☒ Email: [redacted] Compliance place.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)

Metals Analysis
☐ Pb Paint Chip (QTY)
☐ Pb Dust Wipe (wipe type) (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)
☐ Other (Specify) (QTY)
☐ Surface Vacuum Dust (QTY)
☐ Culturable ID Genus (Media) (QTY)
☐ Culturable ID Species (Media) (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
25 Boiler Rm	Elbow	2-6					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

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:**	Seagirt RC	**Chain Of Custody:**	515139
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	NJ	**Date Submitted:**	2/12/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	2/19/2013 **Report Date:** 2/19/2013
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
13037389	1	Flame	Air	583	N/A	5.1	ug/m^3	<3	<5.1	ug/m^3	
13037390	2	Flame	Air	585	N/A	5.1	ug/m^3	<3	<5.1	ug/m^3	
13037391	3	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037392	4	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037393	5	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037394	6	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037395	7	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037396	8	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037397	9	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037398	10	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037399	11	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037400	12	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037401	13	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037402	14	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037403	15	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037404	16	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037405	17	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037406	18	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13037407	19	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	

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A Specialized Environmental Laboratory

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

Client:	National Guard Bureau	**Job Name:**	Seagirt RC	**Chain Of Custody:**	515139
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	NJ	**Date Submitted:**	2/12/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	2/19/2013 **Report Date:** 2/19/2013

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
13037408	20	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13037409	21	Flame	Air Blank	0	N/A	3	ug/m^3		<3	ug	
13037410	22	Flame	Paint Chip	****	N/A	0.0071	%Pb		<0.0071	%Pb	
13037411	23	Flame	Paint Chip	****	N/A	0.0086	%Pb		0.04	%Pb	

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

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) **515139**

1 of 3

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Sea Girt RC
2. Job Location: NJ
3. Job #: PO #: W912K6-09-A-0003
4. Contact Perso[redacted] @ [redacted]-0273
5. Submitted by: [redacted] nature: [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	☒ Incl[redacted] h Report
❑ 24 Hours Time Due:	❑ Next Day ☑ 5 Day +	☒ Ema[redacted] Compliance place.com
Comments:	❑ 2 Day Date Due: 2/19/13	❑ Fax: [redacted] us.army.mil
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ 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 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)

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) 12 (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 Swab (QTY)
- ❑ Surface Tape (QTY)
- ❑ Other (Specify) (QTY)
- ❑ Surface Vacuum Dust (QTY)
- ❑ Culturable ID Genus (Media) (QTY)
- ❑ Culturable ID Species (Media) (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		
1. Drill Hall		2-6	583					X									Date/Time:	Contact: By:
2. Converted firing Range			585					X										
3. Drill Hall - floor				100 cm²				X										
4. Drill Hall - Top of AED-Box								X									Date/Time:	Contact: By:
5. Drill Hall - Top of TV. Stand								X										
6 Kitchen - metal shelf								X										
7 Kitchen - Top of microwave								X										
8 Converted Range - Floor								X										
9 Converted Range - File cabinet								X									Date/Time:	Contact: By:
10 Converted Range - locker								X										
11 Converted Range - HVAC - Supply								X										
12 Floor outside of Range		↓	↓	↓				X										

LABORATORY (CUSTODY)

1. Date/Time RCVD: 2 / 22 / 13 @ 1800 Via: FedEx By (Print): [redacted] Sign: [redacted]
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 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:**	Seagirt RC	**Chain Of Custody:**	515139
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	NJ	**Date Submitted:**	2/12/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	2/19/2013 **Report Date:** 2/19/2013

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
13037389	1	Flame	Air	583	N/A	5.1	ug/m³	<3	<5.1	ug/m³	
13037390	2	Flame	Air	585	N/A	5.1	ug/m³	<3	<5.1	ug/m³	
13037391	3	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037392	4	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037393	5	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037394	6	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037395	7	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037396	8	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037397	9	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037398	10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037399	11	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037400	12	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037401	13	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037402	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037403	15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037404	16	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037405	17	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037406	18	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13037407	19	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	

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ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	Seagirt RC	**Chain Of Custody:**	515139
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	NJ	**Date Submitted:**	2/12/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	2/19/2013 **Report Date:** 2/19/2013

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
13037408	20	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13037409	21	Flame	Air Blank	0	N/A	3	ug/m^3		<3	ug	
13037410	22	Flame	Paint Chip	****	N/A	0.0071	%Pb		<0.0071	%Pb	
13037411	23	Flame	Paint Chip	****	N/A	0.0086	%Pb		0.04	%Pb	

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.

Analys Non-Responsive

Technical Manager: Non-Responsive

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) **515139**

1 of 3

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Sea Girt RC
2. Job Location: NJ
3. Job #: PO #: W912K6-09-A-0003
4. Contact Perso[redacted] @[redacted] (410) 942-0273
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	☒ Inclu[redacted]h Report
❑ 24 Hours Time Due:	❑ Next Day ☒ 5 Day +	☒ Emai[redacted] Compliance place.com
Comments:	❑ 2 Day Date Due: 2/19/13	❑ Fax: [redacted] us.army.mil
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ 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 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)

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) 12 (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 Swab (QTY)
- ❑ Surface Tape (QTY)
- ❑ Other (Specify) (QTY)
- ❑ Surface Vacuum Dust (QTY)
- ❑ Culturable ID Genus (Media) (QTY)
- ❑ Culturable ID Species (Media) (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	CLIENT CONTACT (LABORATORY STAFF ONLY)
1. Drill Hall		2-6	583					X									Date/Time: Contact: By:
2. Converted firing Range			585					X									
3. Drill Hall - floor				100 cm²				X									
4. Drill Hall - Top of AED-Box								X									Date/Time: Contact: By:
5. Drill Hall - Top of TV. Stand								X									
6 Kitchen - metal shelf								X									
7 Kitchen - Top of microwave								X									
8 Converted Range - Floor								X									
9 Converted Range - File cabinet								X									Date/Time: Contact: By:
10 Converted Range - locker								X									
11 Converted Range - HVAC - Supply								X									
12 Floor outside of Range		↓	↓	↓				X									

LABORATORY (CUSTODY)

1. Date/Time RCVD: 2 / 22 / 13 @ 1300 Via: FedEx By (Print): [redacted] Sign: [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 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) 515139
2 of 3

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

Submittal Information:
1. Job Name: Sea Girt RC
2. Job Location: NJ
3. Job #: [redacted] W912K6-09-A-0003
4. Contact Person [redacted] @ phone # (410) 942-0273
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 ☐ Next Day ☐ 2 Day ☐ 3 Day ☐ 5 Day + Date Due: ☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	☒ Incl[redacted] Report ☒ Ema[redacted] compliance place.com ☐ Fax: [redacted] s.army.mil ☐ Verb[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__(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 ____) ____ (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 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
13. Distributed Learning	Desk	2-6		100 cm²				X								
14. S-1 Office -	Book shelf							X								
15. Recruiting office.	Printer							X								
16. RSP - Office	U.V. supply							X								
17. Army Band	Rm. Book shelf							X								
18. Dining Rm.	Top of ~~Ref~~ Frig							X								
19. Cage Supply.	Shelf							X								
20. Blank - wipe				0				X								
21. Blank. Air			0					X								
22. Drill Hall	Floor							X			X					
23 Converted	Range - floor							X			X					
24. Boiler Room	Pipe insulation						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: ___

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515139

3 of 3

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: Sea Girt RC
2. Job Location: NJ
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone # (410) 942-0273
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:	❑ Immediate ❑ 3 Day	☒ Include COC/Field Data Sheet with Report
❑ 24 Hours Time Due:	❑ Next Day ❑ 5 Day +	☒ Email: Non-Responsive Compliance place - Com
Comments:	❑ 2 Day Date Due:	❑ Fax: us.army.mil
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ 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)

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) (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 (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	
25	Boiler Rm Elbow	2-6					X				X						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:

Appendix B. Photographs

Exterior of the facility

Roof damage sustained by Hurricane Sandy

Converted firing range/storage area active roof leaks peeling paint on floor

Drill Hall

Peeling paint on drill hall floor

Suspect asbestos pipe insulation in poor condition shoved into a corner in the boiler room

Suspect asbestos mudded joint fitting in poor condition with suspect asbestos debris on the floor in the boiler room

Suspect asbestos boiler breeching in the boiler room

Distributed learning section of the building where the majority of the roof damaged occurred this area is currently not occupied and water is still infiltrating into the building

Appendix C. Floor Plan

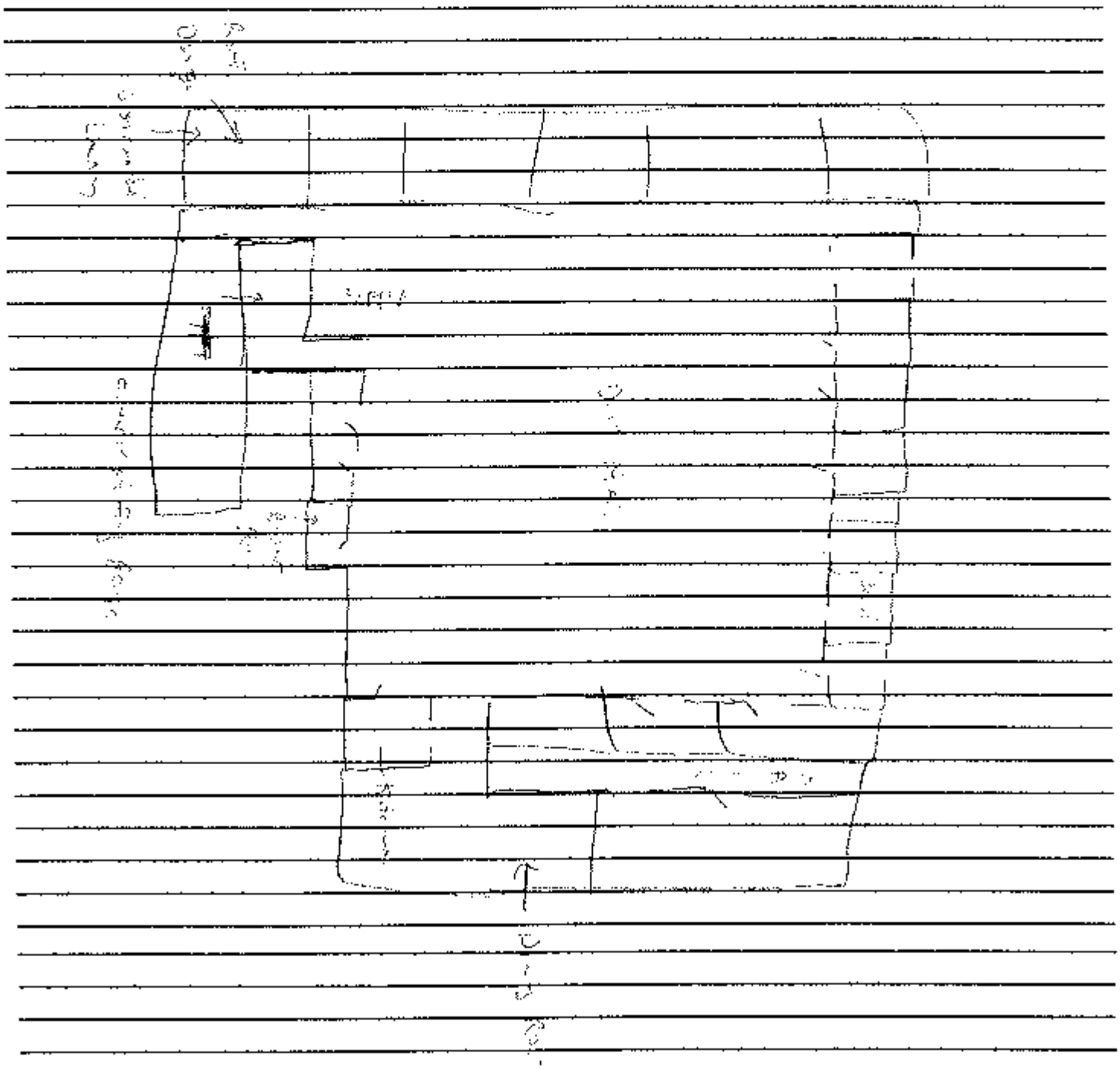
CMI
COMPLIANCE MANAGEMENT INTERNATIONAL

1215 Manor Drive, Suite 205
Mechanicsburg, PA 17055
Phone: 215.699.4800
Fax: 215.699.8315

Daily Notes

Date:

Project Name:



Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

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

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

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227(h)(3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

13. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

INDUSTRIAL HYGIENE SURVEY REPORT
SOMERSET ARMORY
1060 HAMILTON ST
SOMERSET, NEW JERSEY

January 2006
PN: 39741508

Non-Responsive

Office Manager

Non-Responsive

Project Manager

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont)

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Lighting		
On the day of the survey, the illuminance in the administrative area was inadequate in approximately half the offices.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI / IESNA RP-1-04)	RAC 4
Lead		
Lead, in amounts greater than 200 $\mu g/ft^2$ was detected in wipe samples collected from the top of a file cabinet in the general supplies room, and on the floor of the former firing range.	Personnel trained in accordance with the OSHA Lead Standard should clean the drill hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025(h)(1))	RAC 4
Hazard Communication		
No site specific hazard communication plan available.	Develop a site specific hazard communication plan to manage hazardous materials (OSHA 29 CFR 1910.1200(e))	RAC 4
Secondary containers in the janitor's closet did not have labels.	Label all secondary containers not intended for immediate use (OSHA 29 CFR 1910.1200(f)(5))	RAC 4
Mold		
Watermarks were observed on the ceiling tiles and insulation. Mold growth could become an issue if left unattended. Mold was also visible on supply registers.	Determine and repair source of water, Replace water damaged building materials and implement a moisture management program to provide direction for future water incursions (Best management practice)	RAC 4
Ergonomic		
Computer work stations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (DoD, OSHA General Duty)	RAC 3

1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Somerset Armory located at 1060 Hamilton Street in Somerset, New Jersey 08873. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On April 1, 2004, Ms. Non-Responsive an industrial hygienist with URS, conducted a site visit to the National Guard Armory located in Somerset, New Jersey. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. Mr. Non-Responsive and Mr. Non-Responsive Armorers were Ms. Non-Responsive site contact for this survey.

An armory layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer workstation chairs and armrests were in a fixed position and keyboards could not be adjusted in several offices including # 109 (Photo # 5), #113, #115 (Photo # 3), #203 (Photo # 27), and 204A (Photo # 28). Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

Water marks on the ceiling in office #113 (Photo # 1), classroom # 110 (Photo # 4), Office #101B (Photo # 7), Office #103 (Photo # 9), Office #103A (Photo # 10), Women's Room 105 (Photo # 12), Hallway Behind Room 107 (Photo # 13), Kitchen (Photo # 19), Room 138 (Photos # 23 & # 24), Conference Room (Photo # 32), General Supply Area (Photo # 34), Gym (Photo # 35), Conference Room next to Gym (Photos # 36 & # 37), and Office 219A (Photo # 38) may indicate the potential for mold growth. Mold growth was already visible on surfaces such as supply registers and insulation in Office 101A (Photo # 6), Office 115 (Photo # 2), Office #101 (Photo # 8), Armorer's Room #121 (Photo # 18), Kitchen (Photo # 19), Room #138 (Photos # 23 & # 24), Office #206 (Photo # 25), Office #208 (Photo # 26), Bathroom #207 (Photo # 27), Office #204A (Photo # 28), and Conference Room EOC (Photo # 33).

The Armorer's Room (#121) where chemicals and cleaning supplies are located was very cluttered and the flammable cabinet was obstructed (Photos # 15 & # 16). There was also an unlabeled secondary container with an unknown material (Photo # 17).

2.2 Chemical and Physical Agents Sampled

2.2.1 Relative Humidity

Relative humidity levels were measured using a TSI Q-Track (Model 8551). Relative humidity on the day of the survey ranged from 33% – 37% with an average of 35%. This average reading was below the recommended maximum of 65% set by the

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

2.2.2 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made at various locations throughout the Armory. Carbon dioxide concentrations ranged from 819 to 948 parts per million (ppm), with an average of 884 ppm. Carbon dioxide levels were measured using a direct-reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above outside level. Given an outside level of 490 ppm on the day of the survey, the ASHRAE limit would be 1190 ppm.

2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. The carbon monoxide concentration remained below detectable limits throughout the survey period. This measured level was below the ASHRAE (62.1-2004) guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters,

and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion. ASHRAE (62.1-2004) recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

2.2.4 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI/IESNA RP–1-04 American National Standard Practice for Office Lighting)

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Illuminance (lux / foot candles)
Office # 101	Administrative Duties	483 / 44.9	500 / 50
Office # 101A	Administrative Duties	589 / 54.7	500 / 50
Office # 101B	Administrative Duties	730 / 67.8	500 / 50
Office # 101C	Administrative Duties	565 / 52.5	500 / 50
Office # 102	Administrative Duties	574 / 53.3	500 / 50
Office # 102 Cubicle	Administrative Duties	370 / 34.4	500 / 50
Room #103	Meeting Room	536 / 49.8	500 / 50
Room #103A	Meeting Room	408 / 37.9	500 / 50
Room #104A	Childcare Center	650 / 60.4	500 / 50
Room #104 Childcare Center	Childcare Center	468 / 43.5	500 / 50
Room #108 Computer Storage	Storage	544 / 50.5	300 / 30
Office # 109	Administrative Duties	503 / 46.7	500 / 50
Classroom #110	Learning Center	249 / 23.1	500 / 50
Classroom #111	Learning Center	374 / 34.7	500 / 50
Office #113	Administrative Duties	536 / 49.8	500 / 50
Office #114	Administrative Duties	628 / 58.3	500 / 50
Office #115	Administrative Duties	454 / 42.2	500 / 50
Room #136	Storage	520 / 48.3	300 / 30
Room #138	Storage	239 / 22.2	300 / 30
Armorer's Room #121	Storage	126 / 11.7	300 / 30

Table 2-1 (Cont)
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Illuminance (lux / foot candles)
Former Firing Range	Storage	120 / 11.1	300 / 30
Supply Room #132	Storage	230 / 21.4	300 / 30
Kitchen	Kitchen	393 / 36.5	500 / 50
Office #200	Administrative Duties	969 / 90.0	500 / 50
Office #202	Administrative Duties	383 / 35.6	500 / 50
Office #203	Administrative Duties	323 / 30.0	500 / 50
Office #203 – S1 Left	Administrative Duties	421 / 39.1	500 / 50
Office #203 – S1 Right	Administrative Duties	503 / 46.7	500 / 50
Office #203A	Administrative Duties	816 / 75.8	500 / 50
Office #203B	Administrative Duties	433 / 40.2	500 / 50
Conference Room #204	Administrative Duties	506 / 47.0	500 / 50
Office #204A	Administrative Duties	363 / 33.7	500 / 50
Office #204B	Administrative Duties	623 / 57.9	500 / 50
Conference Room #205	Administrative Duties	216 / 20.1	500 / 50
Office #206	Administrative Duties	256 / 23.8	500 / 50
Office #208	Administrative Duties	473 / 43.9	500 / 50
Office #211A	Administrative Duties	188 / 17.5	500 / 50
Office #211B	Administrative Duties	349 / 32.4	500 / 50
Office #211C	Administrative Duties	928 / 86.2	500 / 50
Mail Room #215	Administrative Duties	217 / 20.2	500 / 50
Room #216	Storage	702 / 65.2	300 / 30
Office #27	Administrative Duties	501 / 46.5	500 / 50
Office #218	Administrative Duties	469 / 43.6	500 / 50
Office #218A	Administrative Duties	592 / 55.0	500 / 50
Conference Room #219	Administrative Duties	472 / 43.8	500 / 50
Office #219A	Administrative Duties	542 / 50.4	500 / 50
Office #219B	Administrative Duties	340 / 31.6	500 / 50
Office #219C	Administrative Duties	532 / 49.4	500 / 50
Conference Room #220	Administrative Duties	450 / 41.8	500 / 50
Office #221	Administrative Duties	969 / 90.0	500 / 50
Office #221A	Administrative Duties	587 / 54.5	500 / 50
Office #221B	Administrative Duties	728 / 67.6	500 / 50
Office #221C	Administrative Duties	685 / 63.6	500 / 50
Conference Room EOC	Administrative Duties	549 / 51.0	500 / 50
General Supplies	Administrative Duties	342 / 31.8	300 / 30
Fitness Center	Fitness Center	325 / 30.2	300 / 30
Community Room	Community Room	384 / 35.7	300 / 30
Office – Community Room	Administrative Duties	517 / 48.0	500 / 50

On the day of the survey the illuminance in the administrative area was inadequate in a number of the offices.

2.2.5 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Table 2-2 below shows the results of the lead sampling.

Table 2-2
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Office #114 – Windowsill	WS-1	0.111	29	200
Office #109 – Cabinet	WS-2	0.111	6.8	200
Office #101 – File Cabinet	WS-3	0.111	11	200
Office #102 – Bookcase	WS-4	0.111	38	200
Room #104 – Television	WS-5	0.111	4.1	200
Room #126 (Kitchen) – Cabinet	WS-7	0.111	7.3	200
Room #132 – File Cabinet	WS-8	0.111	11	200
Ladies Room 1st Floor – Towel Dispenser	WS-9	0.111	20	200
Office #208 – Windowsill	WS-10	0.111	81	200
Office #211 – File Cabinet	WS-11	0.111	42	200
Room #204 – Cabinet	WS-12	0.111	130	200
Room #215 – Television	WS-13	0.111	11	200
Office #203 – Computer Monitor	WS-14	0.111	9.8	200
Office #220 – File Cabinet	WS-15	0.111	61	200
Office #221 – Floor	WS-16	0.111	26	200
Office #218 – File Cabinet	WS-17	0.111	150	200

Table 2-2 (Cont)
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Fitness Center – Windowsill	WS-18	0.111	34	200
Community Room – Table	WS-19	0.111	18	200
Women's Room #105 – Towel Dispenser	RWS-01	0.111	12	200
Office #121 – File Cabinet	RWS-02	0.111	160	200
Office #110 – Windowsill	RWS-03	0.111	<34	200
Office #200 – Windowsill	RWS-04	0.111	11	200
General Supplies – File Cabinet	RWS-05	0.111	430	200

Only one sample was found to contain lead in a quantity greater than the recommended NGB level.

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

GENERAL: In general, the administrative area was neat and orderly. The fire exits and extinguishers were marked and easily accessible.

ERGONOMICS: The ergonomic issues with desks, chairs and monitors need to be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey, the illuminance in the administrative area was inadequate in a few offices. URS recommends increasing lighting in the few administrative areas. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

LEAD: One (1) of the twenty-three (23) surface wipe samples in the administrative area was found to contain lead dust levels above the recommended limit set by the National Guard Bureau (See Appendix F). URS recommends cleaning the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025). The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G.

MOLD: The water stains on the ceilings could lead to mold problems if not addressed. Visible growth was observed on supply registers in several locations.

3.0 FORMER FIRING RANGE

3.1 Operation Description

The firing range has been dismantled and this building area is now primarily used for storage, offices and a classroom.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1
Levels of Lead Dust Found in the Former Firing Range

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Former Firing Range-Shelf	FR-01	0.111	33	200
Former Firing Range-Floor	FR-02	0.111	600	200
Former Firing Range-Bookcase	FR-03	0.111	81	200
Former Firing Range-Floor	FR-04	0.111	870	200
Former Firing Range-Table	FR-05	0.111	200	200

Three samples were found to contain lead in a concentration greater than the recommended NGB limit.

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: Three (3) of the five (5) five surface wipe samples collected in the former firing range were found to contain lead dust levels above the recommended limit set by the National Guard Bureau (See Appendix F). URS recommends cleaning the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025). The NGB has prepared a memorandum titled "Recommendations for Surface Lead Dust in Armories" which is provided in Appendix G. Appendix H contains guidelines for the cleaning and rehabilitation of indoor firing ranges.

4.0 DRILL HALL

4.1 Operation Description

The drill hall is used for assembling personnel and storing equipment. The walls are constructed of cinder-block with a concrete floor.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1
Level of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Drill Hall Outside Room #120 – Vending Machine	WS-06	0.111	39	200

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: The wipe sample collected from on top of the vending machine in the drill hall was found to contain lead in a concentration less than 200 micrograms per square foot (OSHA 29 CFR 1910.1025).

5.0 BOILER ROOM

5.1 Operation Description

The boiler room is a mechanical space constructed of cinder block walls with a concrete floor, containing a furnace and associated piping.

5.2 Chemical and Physical Agents Sampled

5.2.1 Asbestos

According to the Armorer at this site, all asbestos was removed from the boiler room. However, asbestos abatement records were not found at the site.

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

Not applicable to this operation.

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is required for this site with a confined space behind the old bullet trap of the former firing range.

6.2 Hearing Conservation

No safety program was found regarding hearing conservation. No training records were found on site. A hearing conservation program is not required for this site.

6.3 Respiratory Protection

No safety program was found regarding respiratory protection. No training records were found on site. A respiratory protection program is not required for this site.

6.4 Hazard Communication

No program was found regarding hazard communication. No training records were found on site. A site-specific hazard communication program is required for this site and should include communication of hazards to employees, management of material safety data sheets, chemical labeling and spill protection.

6.5 Personal Protective Equipment

No safety program was found regarding personal protective equipment. No training records were found on site. A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/IESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 55-2004: Thermal Environmental Conditions For Human Occupancy

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15, 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

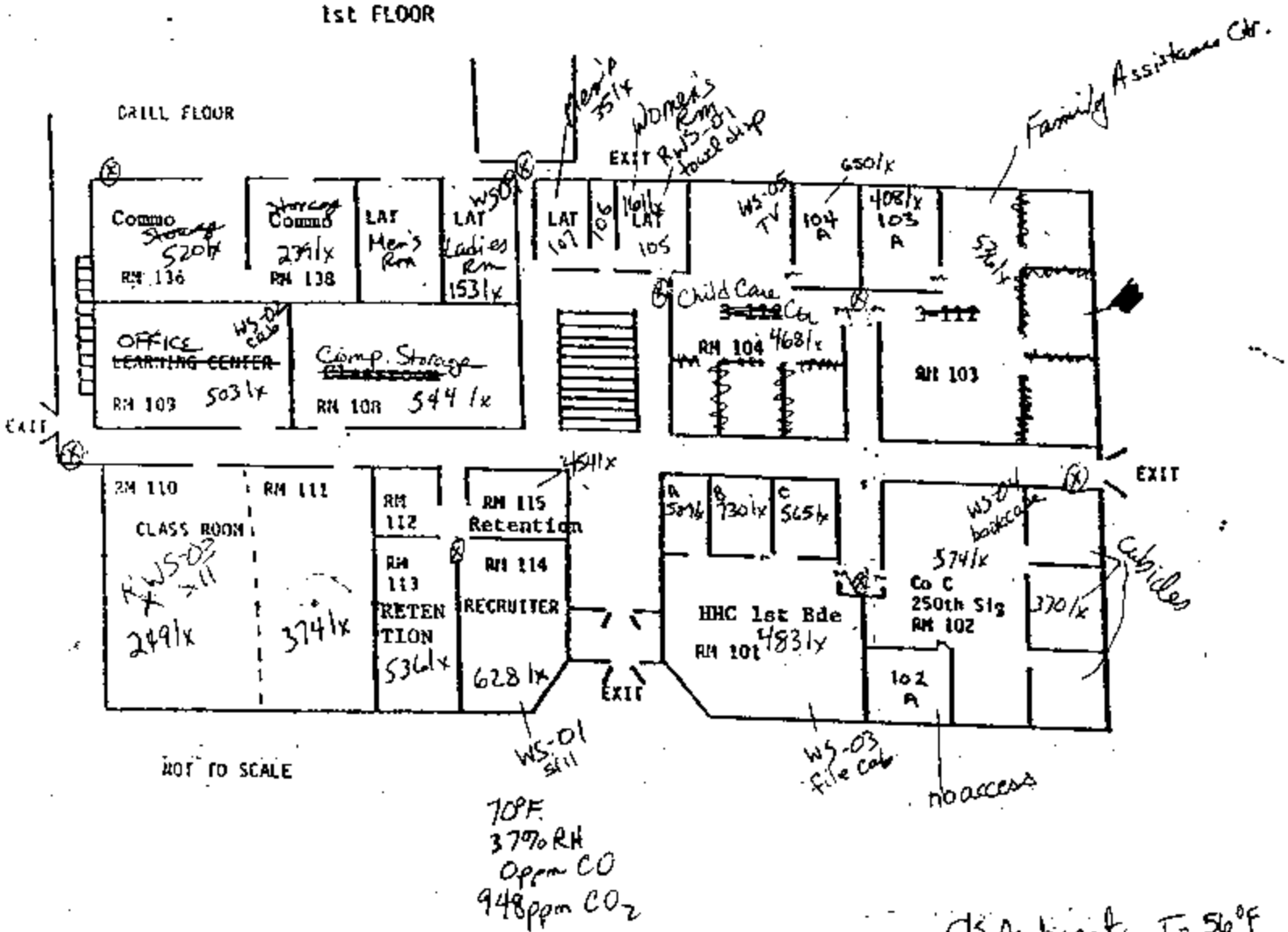
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

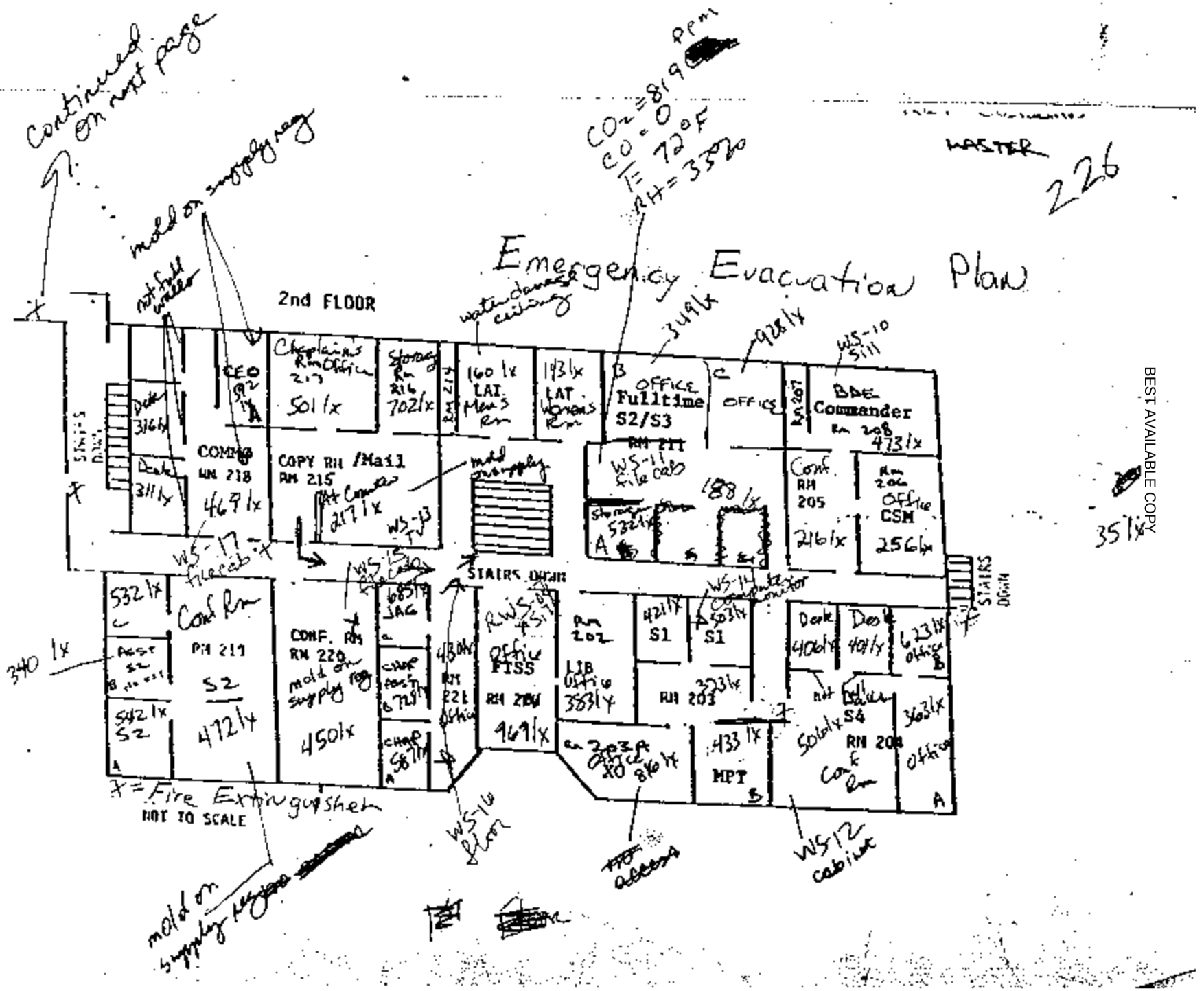
Standard for General Industry: 29 CFR 1910

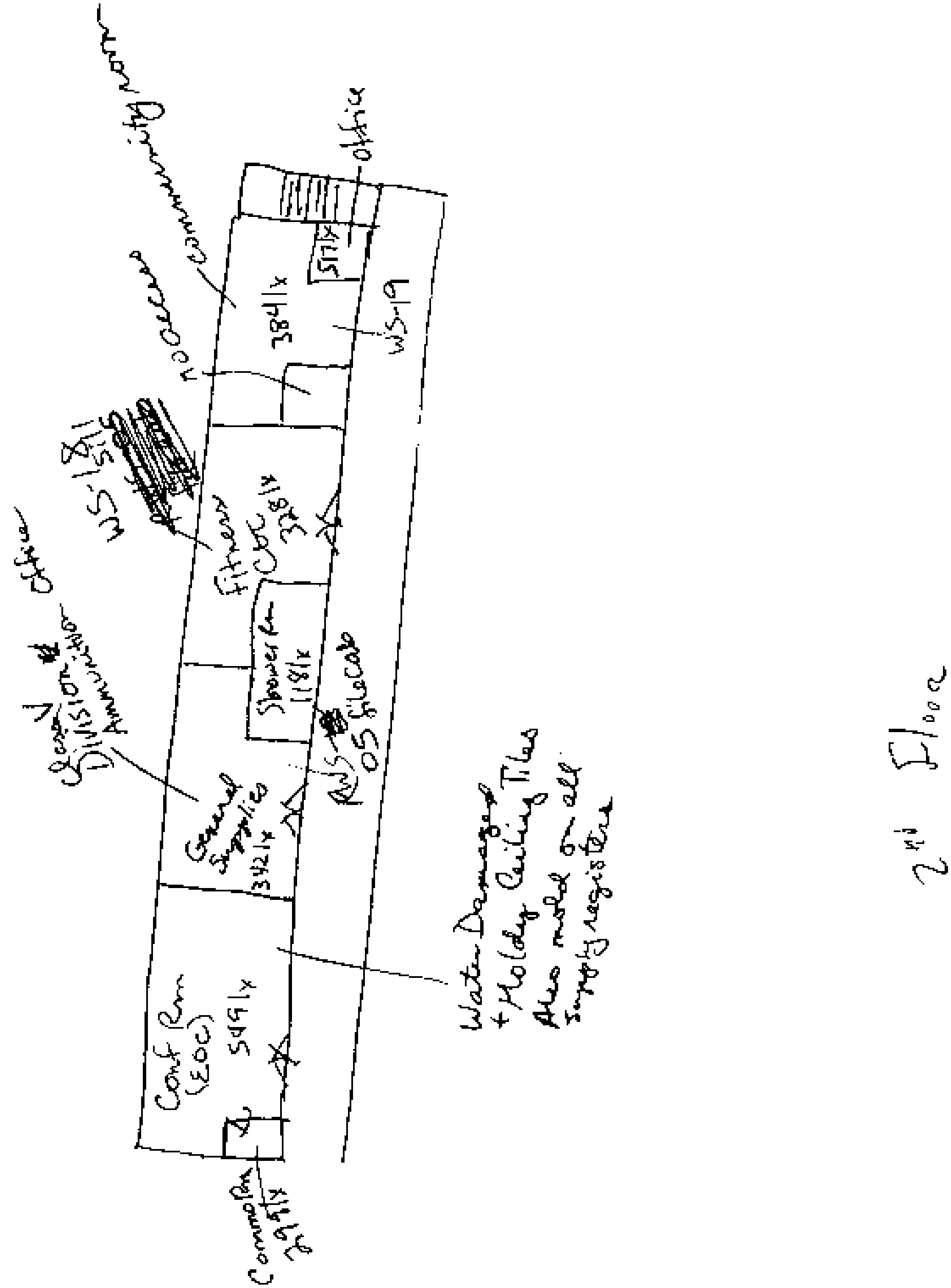
APPENDIX A

ARMORY DRAWING



Somerset, NJ Armory




community room
office
no access
384 lx
517 lx
WS-19
WS-18!!
Fitness Ctr
328 lx
Division
Ammunition office
Shower Rm
118 lx
OS file Cab
General Supplies
342 lx
Water Damaged
+ Molding Ceiling Tiles
Also mold on all
supply registers
Conf Rm
(EOC)
549 lx
CommoRm
2nd Floor

APPENDIX B

PERSONNEL LIST

NOT PROVIDED

APPENDIX C

HAZARDOUS MATERIALS LIST

NOT PROVIDED

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

NVLAP
NY ELAP
AIHA

CERTIFICATE OF ANALYSIS

Client: National Guard Bureau
Address: 301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation
Havre de Grace, Maryland 21078
Attention: [redacted]

Job Name: Armory
Job Location: Somerset, NJ
Job Number: Not Provided
P.O. Number: BPA #W912K6-04-A0002

Chain Of Custody: 128463
Date Analyzed: 6/25/2004
Person Submitting: [redacted]
Report Date: 25-Jun-04

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
0448720	WS-1	Furnace	Wipe	****	0.111	13.50 ug/ft²	29 ug/ft²	
0448721	WS-2	Furnace	Wipe	****	0.111	2.70 ug/ft²	6.8 ug/ft²	
0448722	WS-3	Furnace	Wipe	****	0.111	2.70 ug/ft²	11 ug/ft²	
0448723	WS-4	Furnace	Wipe	****	0.111	13.50 ug/ft²	38 ug/ft²	
0448724	WS-5	Furnace	Wipe	****	0.111	2.70 ug/ft²	4.1 ug/ft²	
0448725	WS-6	Furnace	Wipe	****	0.111	13.50 ug/ft²	39 ug/ft²	
0448726	WS-7	Furnace	Wipe	****	0.111	2.70 ug/ft²	7.3 ug/ft²	
0448727	WS-8	Furnace	Wipe	****	0.111	2.70 ug/ft²	11 ug/ft²	
0448728	WS-9	Furnace	Wipe	****	0.111	2.70 ug/ft²	20 ug/ft²	
0448729	WS-10	Furnace	Wipe	****	0.111	33.75 ug/ft²	81 ug/ft²	
0448730	WS-11	Furnace	Wipe	****	0.111	13.50 ug/ft²	42 ug/ft²	
0448731	WS-12	Furnace	Wipe	****	0.111	67.51 ug/ft²	130 ug/ft²	
0448732	WS-13	Furnace	Wipe	****	0.111	2.70 ug/ft²	11 ug/ft²	
0448733	WS-14	Furnace	Wipe	****	0.111	2.70 ug/ft²	9.8 ug/ft²	
0448734	WS-15	Furnace	Wipe	****	0.111	13.50 ug/ft²	61 ug/ft²	
0448735	WS-16	Furnace	Wipe	****	0.111	13.50 ug/ft²	26 ug/ft²	
0448736	WS-17	Furnace	Wipe	****	0.111	67.51 ug/ft²	150 ug/ft²	
0448737	WS-18	Furnace	Wipe	****	0.111	33.75 ug/ft²	34 ug/ft²	
0448738	WS-19	Furnace	Wipe	****	0.111	13.50 ug/ft²	18 ug/ft²	
0448739	RWS-01	Furnace	Wipe	****	0.111	2.70 ug/ft²	12 ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	128463
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Somerset, NJ	**Date Analyzed:**	6/25/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	BPA #W912K6-04-A0002	**Report Date:**	
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
0448740	RWS-02	Furnace	Wipe	****	0.111	67.51	ug/ft²		160	ug/ft²	
0448741	RWS-03	Furnace	Wipe	****	0.111	33.75	ug/ft²	<	34	ug/ft²	
0448742	RWS-04	Furnace	Wipe	****	0.111	2.70	ug/ft²		11	ug/ft²	
0448743	RWS-05	Flame	Wipe	****	0.111	108.01	ug/ft²		430	ug/ft²	
0448744	FR-02	Flame	Wipe	****	0.111	108.01	ug/ft²		600	ug/ft²	
0448745	FR-03	Furnace	Wipe	****	0.111	67.51	ug/ft²		81	ug/ft²	
0448746	FR-04	Flame	Wipe	****	0.111	108.01	ug/ft²		870	ug/ft²	
0448747	FR-05	Furnace	Wipe	****	0.111	67.51	ug/ft²		200	ug/ft²	
0448748	FR-01	Furnace	Wipe	****	0.111	13.50	ug/ft²		33	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 results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted]

Technical Manager: [redacted]

APPENDIX E

TRAINING CERTIFICATES

Certificate of Training

[redacted] Non-Responsive

For successful completion of a 4 Hour, 1/2 Day

Asbestos Building Inspector
Annual Refresher Training
DECEMBER 5, 2003

This training was approved and given in accordance with the Regulations for Connecticut State Agencies RCSA 20 - 440 - 1-9 and RCSA 20 - 441 and meets the requirements of the EPA Revised MAP under TSCA Title II of 4/4/94.

Presented by

Mystic Air Quality Consultants, Inc.
1204 North Road, Groton, CT 06340 (800) 247-7746

Certificate Number: ABIRF11392 **Exam Grade:** 87%

Exam Date: 12/05/2003

Expiration Date: 12/05/2004

[redacted] Non-Responsive
CIH, CSP, RS

[redacted] Non-Responsive
Training Director

APPENDIX F

PHOTOGRAPHS

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
1	4/1/04

Description:

Office #113 – Water Stained Ceiling Tiles

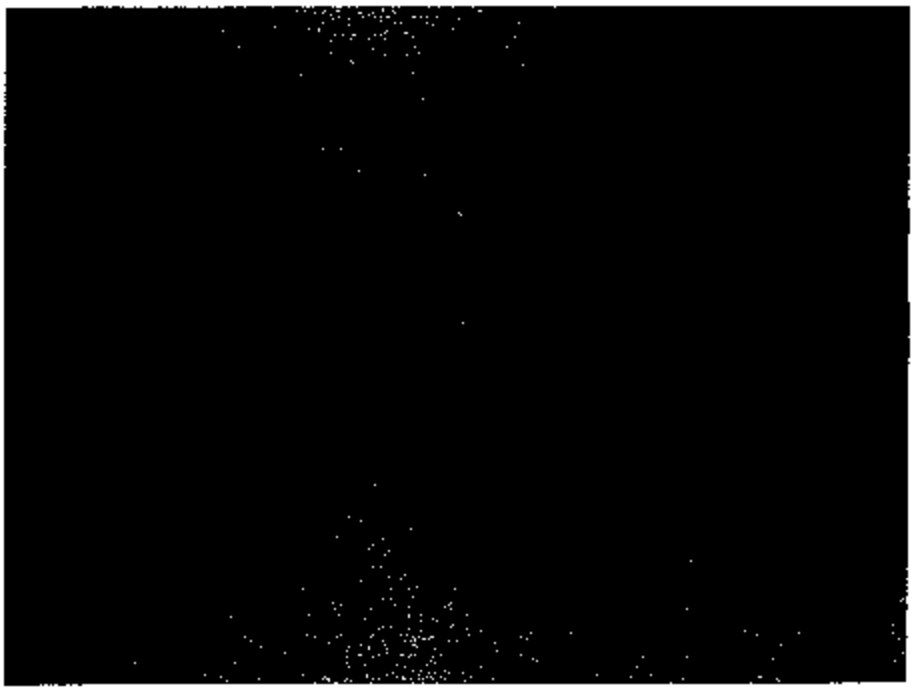
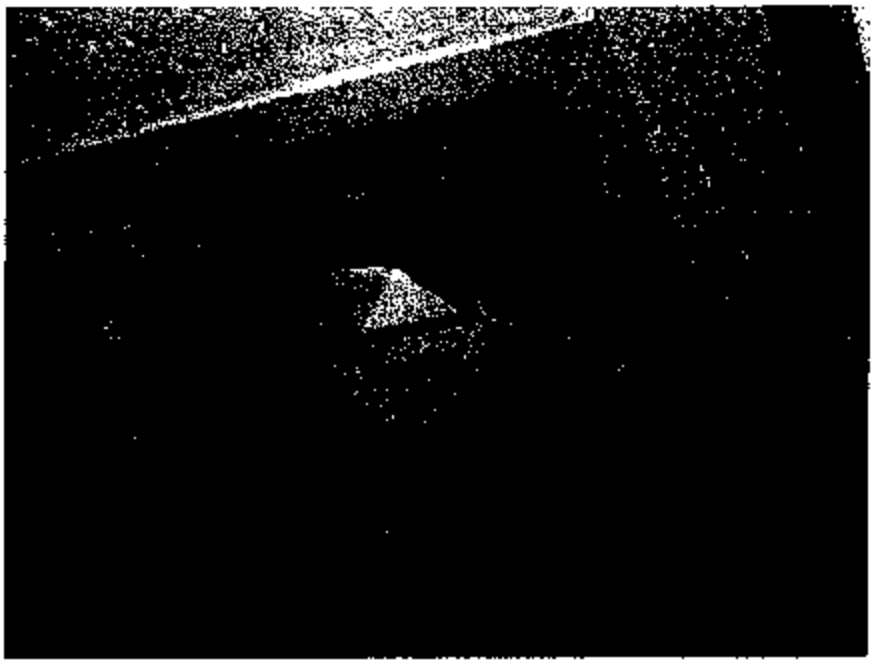


Photo No.	Date:
2	4/1/04

Description:

Office #115 – Possible mold Growth



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
3	4/1/04

Description:

Office #115 – Desk Set-up

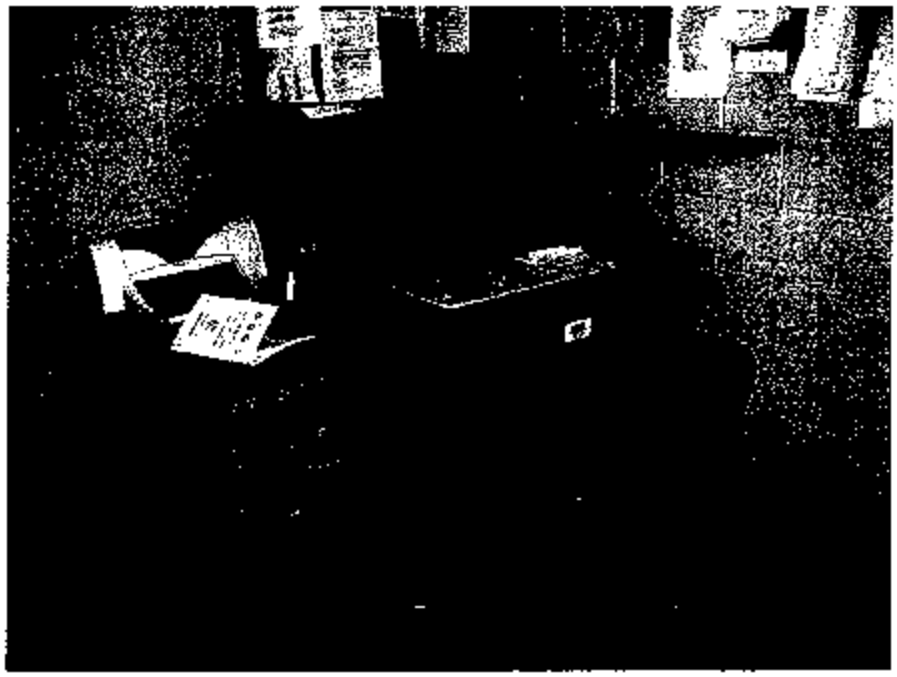
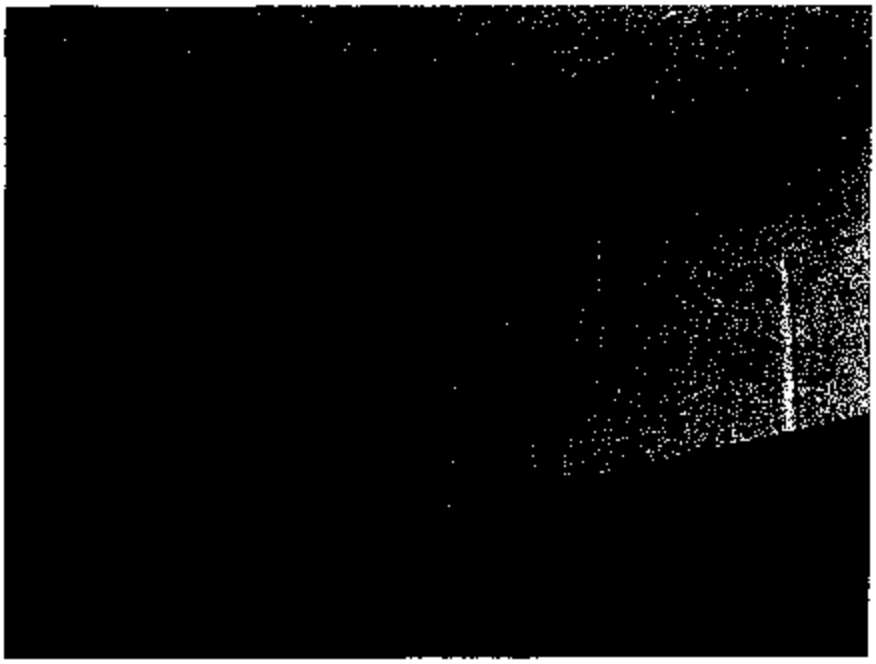


Photo No.	Date:
4	4/1/04

Description:

Classroom #110 – Water Stained Ceiling Tile



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
5	4/1/04

Description:

Office #109 – Desk Set-up

Photo No.	Date:
6	4/1/04

Description:

Office #101A – Possible Mold on Register

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
7	4/1/04

Description:

Office #101B – Ware Stained Ceiling Tile

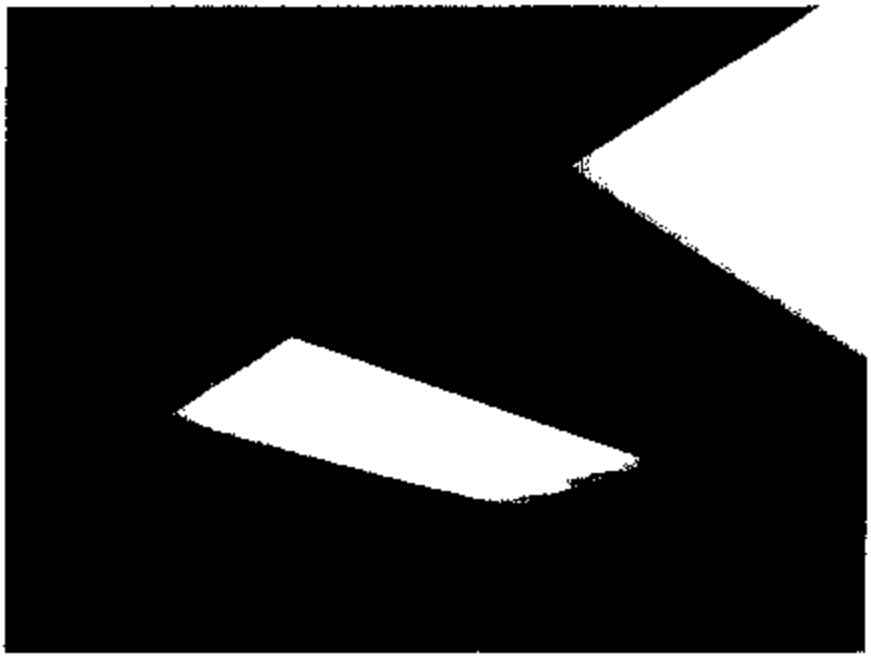


Photo No.	Date:
8	4/1/04

Description:

Office #101 – Possible Mold on Ceiling Tile

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
9	4/1/04

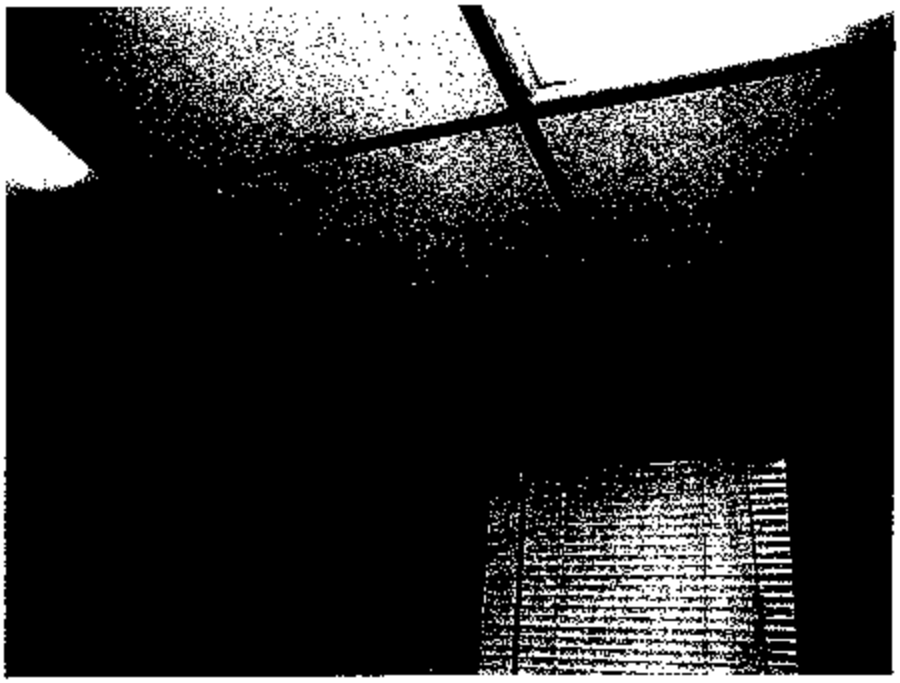
Description:

Room #103 – Water Stained Ceiling Tile

Photo No.	Date:
10	4/1/04

Description:

Room #103A – Water Stained Ceiling Tile



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
11	4/1/04

Description:

Hallway Outside Rooms #103 and #104 – Fire Exlinguisher

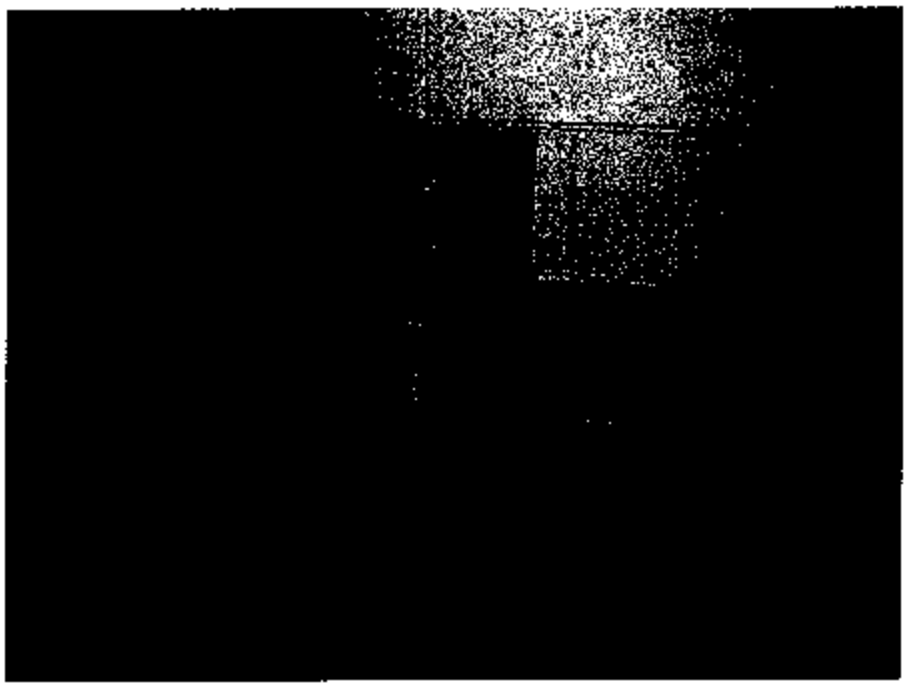
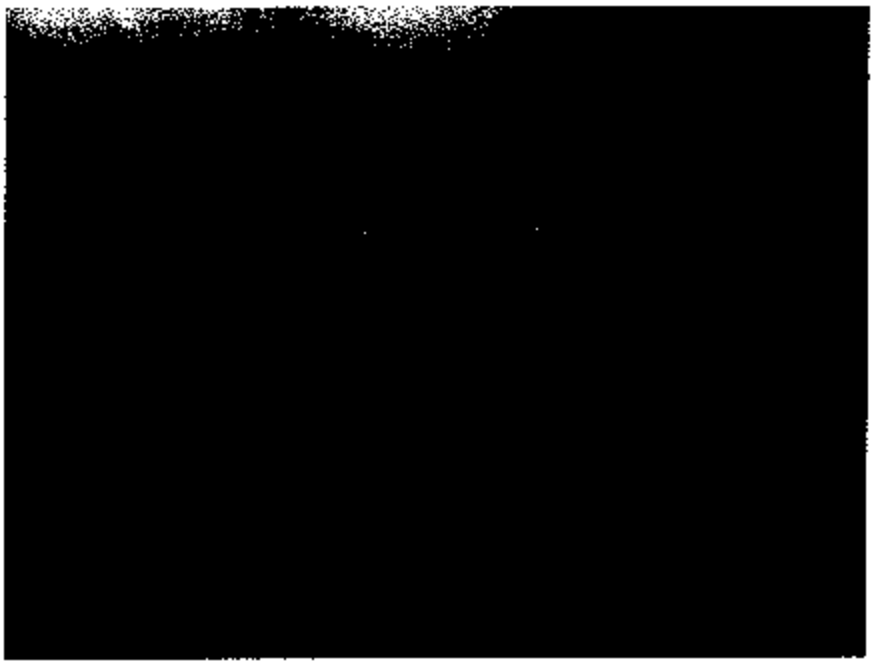


Photo No.	Date:
12	4/1/04

Description:

Women's Room #105 – Damaged Ceiling



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
13	4/1/04

Description:

Hallway Behind Room #107 – Water Stained Ceiling Tile

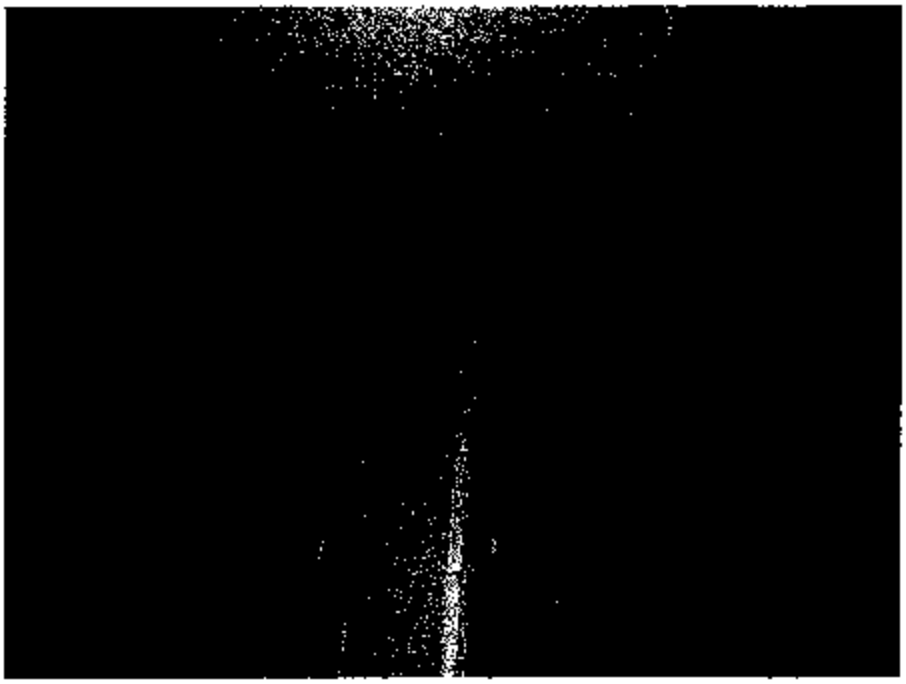
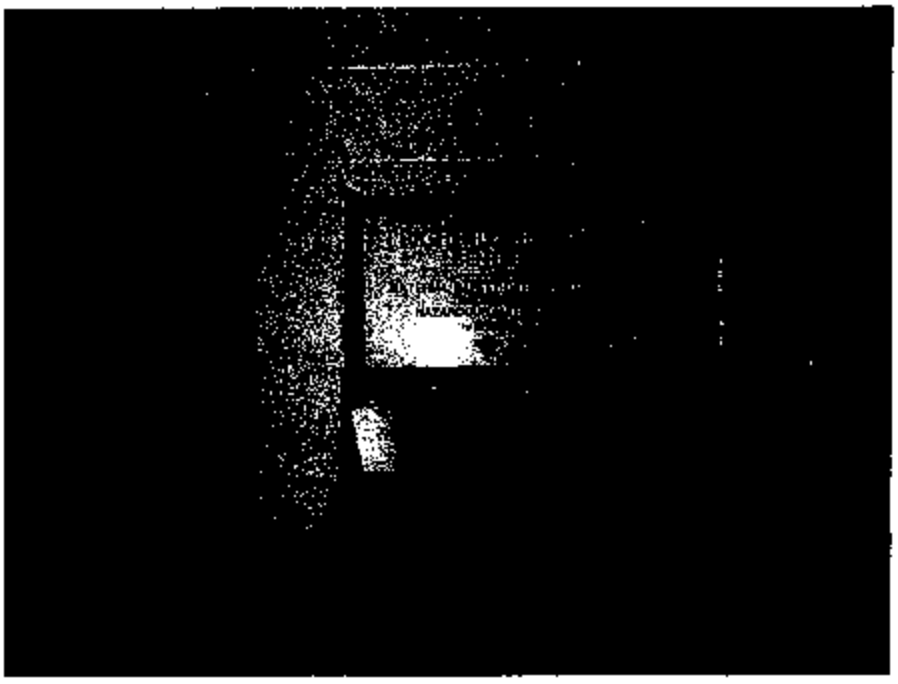


Photo No.	Date:
14	4/1/04

Description:

Drill Floor Outside Armorer's Room – Right to Know Center



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
15	4/1/04

Description:

Armorer's Room #121 – Flammable Cabinet

Photo No.	Date:
16	4/1/04

Description:

Armorer's Room #121 – Chemical Storage

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
17	4/1/04

Description:

Armorer's Room #121 – Unlabeled Secondary Container

Photo No.	Date:
18	4/1/04

Description:

Armorer's Room #121 – Water Damaged Insulation

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
19	4/1/04

Description:

Kitchen – Water Damaged Ceiling & Possible Mold Growth

Photo No.	Date:
20	4/1/04

Description:

Old Firing Range

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
21	4/1/04

Description:

Old Firing Range

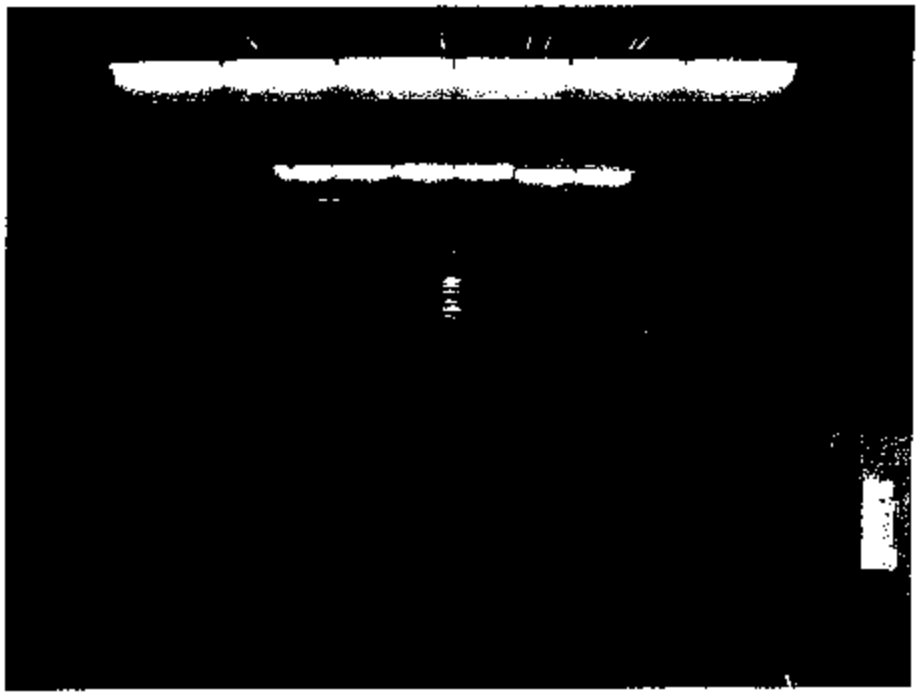
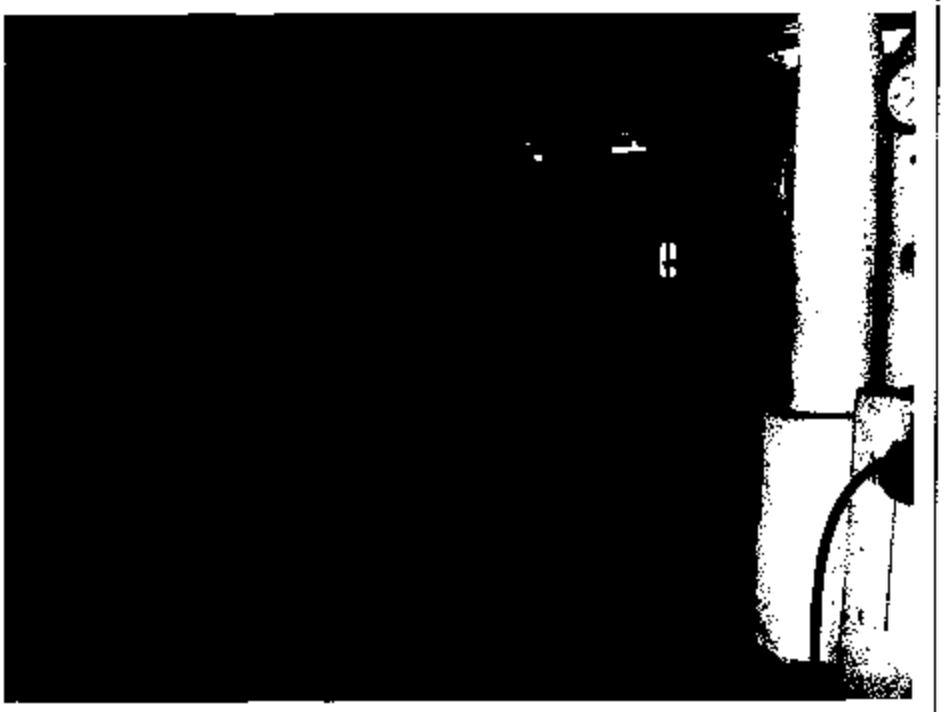


Photo No.	Date:
22	4/1/04

Description:

Boiler Room



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
23	4/1/04

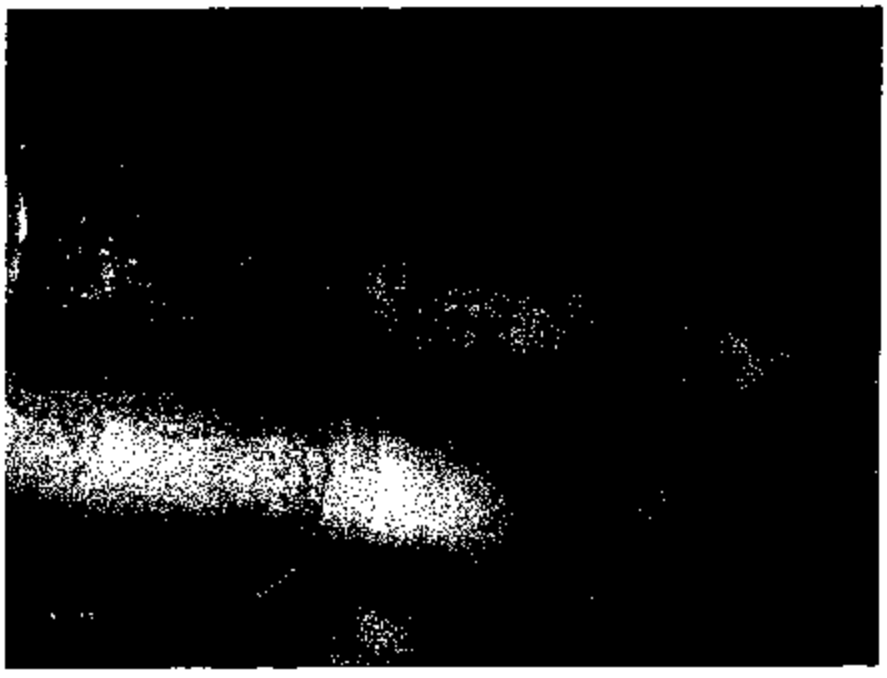
Description:

Room #138 – Water Damaged Ceiling Tile and Insulation

Photo No.	Date:
24	4/1/04

Description:

Room #138 – Water Damaged Ceiling Tile and Insulation



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No. 25 | **Date:** 4/1/04

Description:

Room #206 – Mold Growth on Supply Register

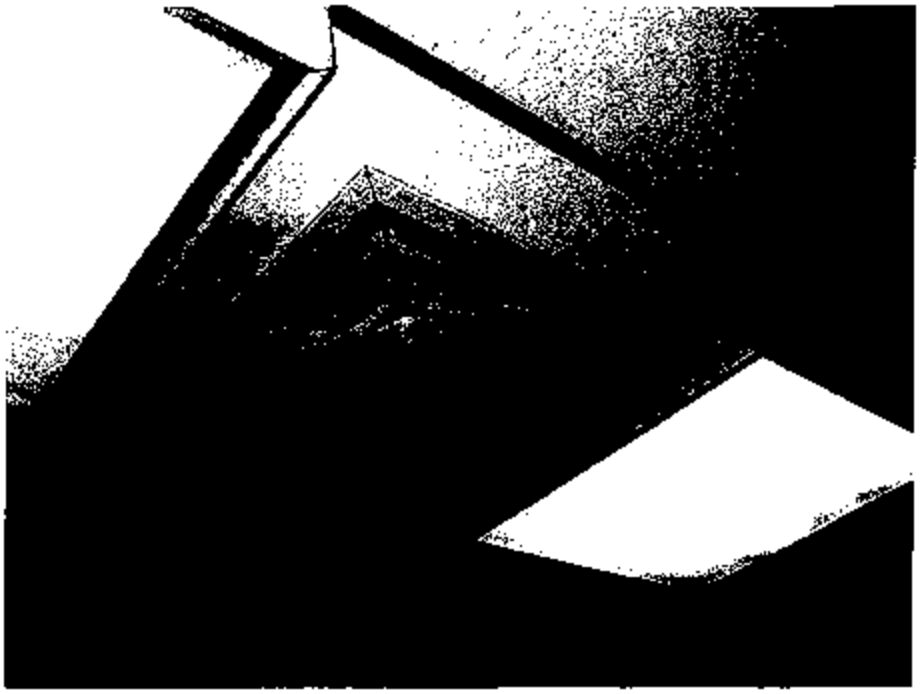
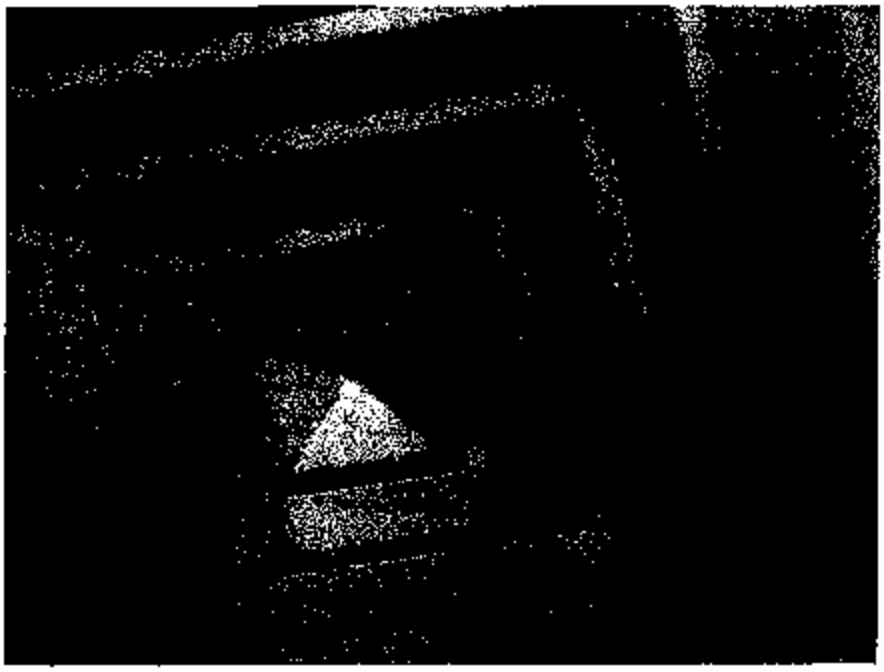


Photo No. 26 | **Date:** 4/1/04

Description:

Room #208 – Mold Growth on Supply Register



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
27	4/1/04

Description:

Bathroom #207 – Mold Growth on Supply Register

Photo No.	Date:
28	4/1/04

Description:

Room #204A – Mold Growth on Supply Register

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
29	4/1/04

Description:

Room #203 – Desk Set-up

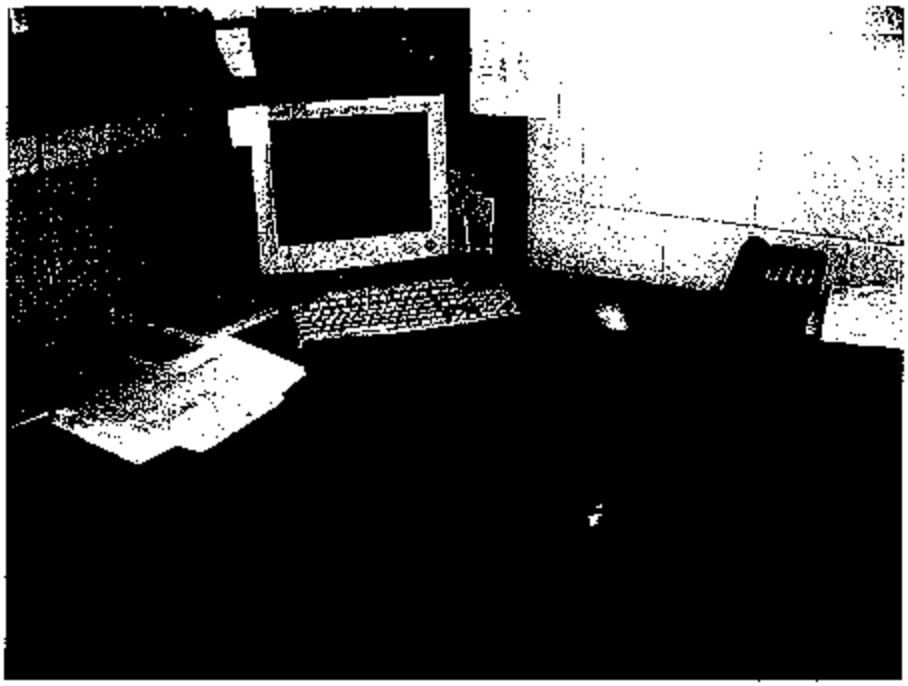
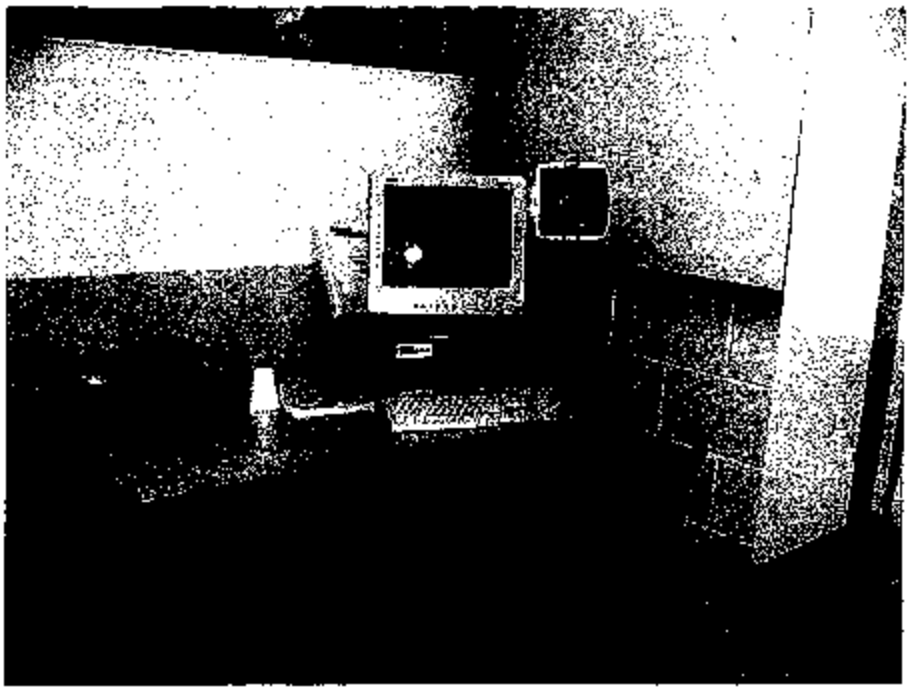


Photo No.	Date:
30	4/1/04

Description:

Room #203 – Desk Set-up



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
31	4/1/04

Description:

Room #214 – Chemical Storage

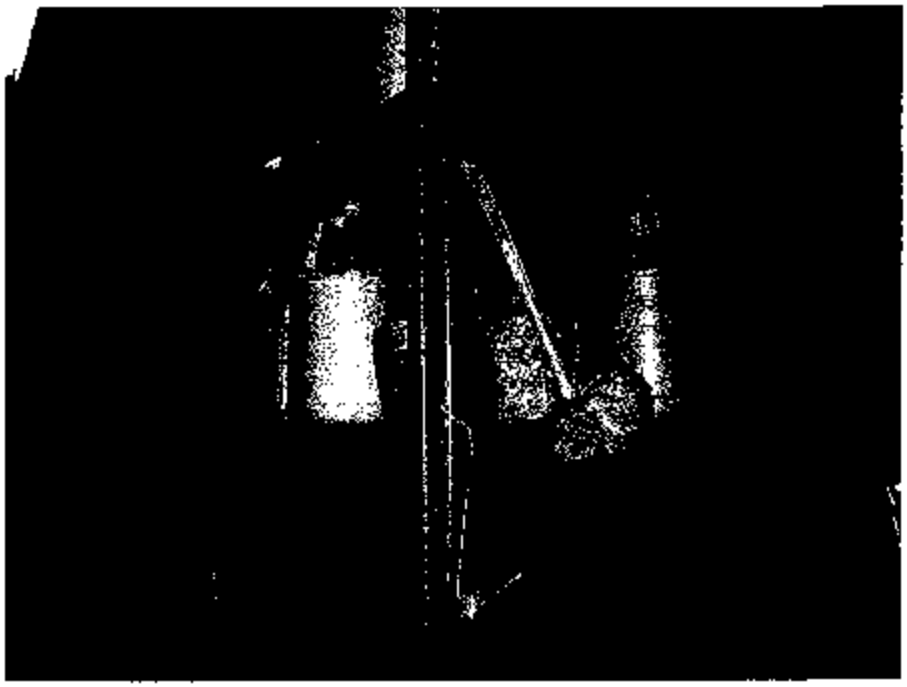
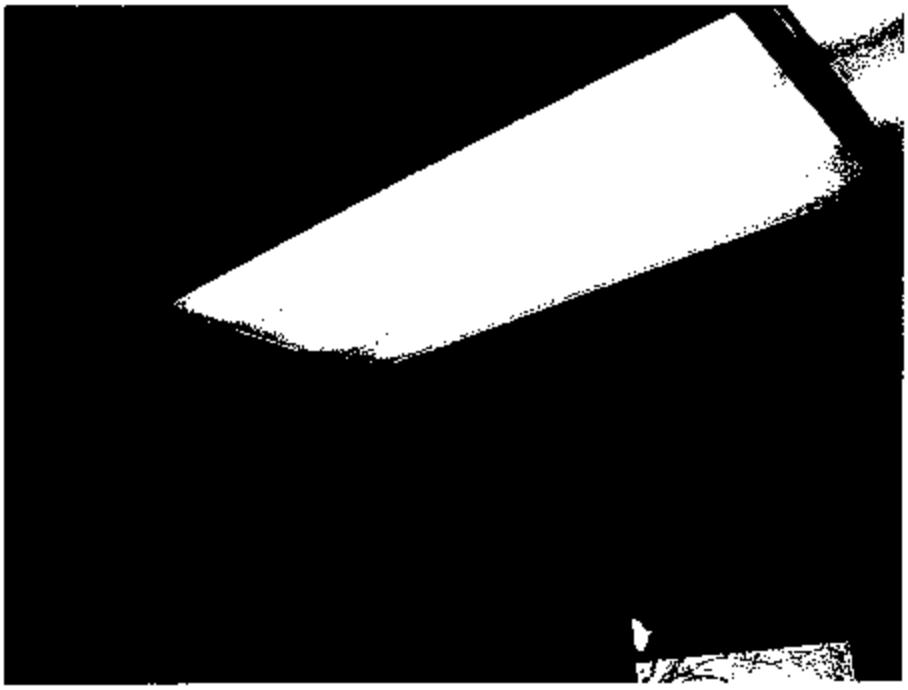


Photo No.	Date:
32	4/1/04

Description:

Conference Room – EOC – Water Damaged Ceiling Tile



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
33	4/1/04

Description:

Conference Room –EOC – Mold on Supply Register

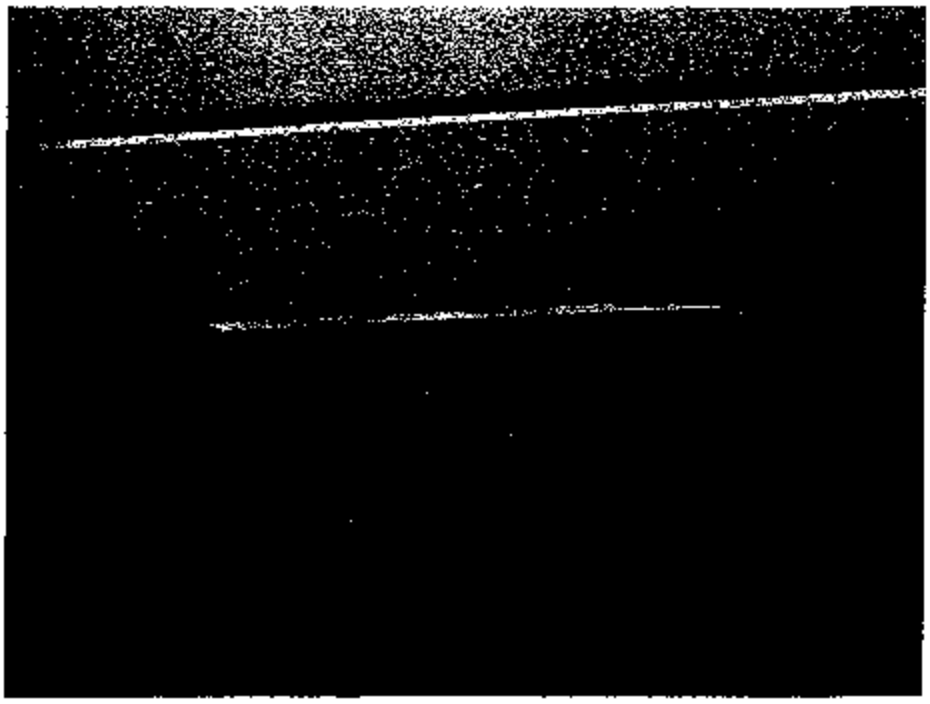


Photo No.	Date:
34	4/1/04

Description:

General Supplies – Water Damaged Ceiling Tile

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
35	4/1/04

Description:

Gym – Water Damaged Ceiling Tile

Photo No.	Date:
36	4/1/04

Description:

Community Room Next To Gym – Water Damaged Ceiling Tile

URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
37	4/1/04

Description:

Community Room Next to Gym – Water Damaged Ceiling Tile

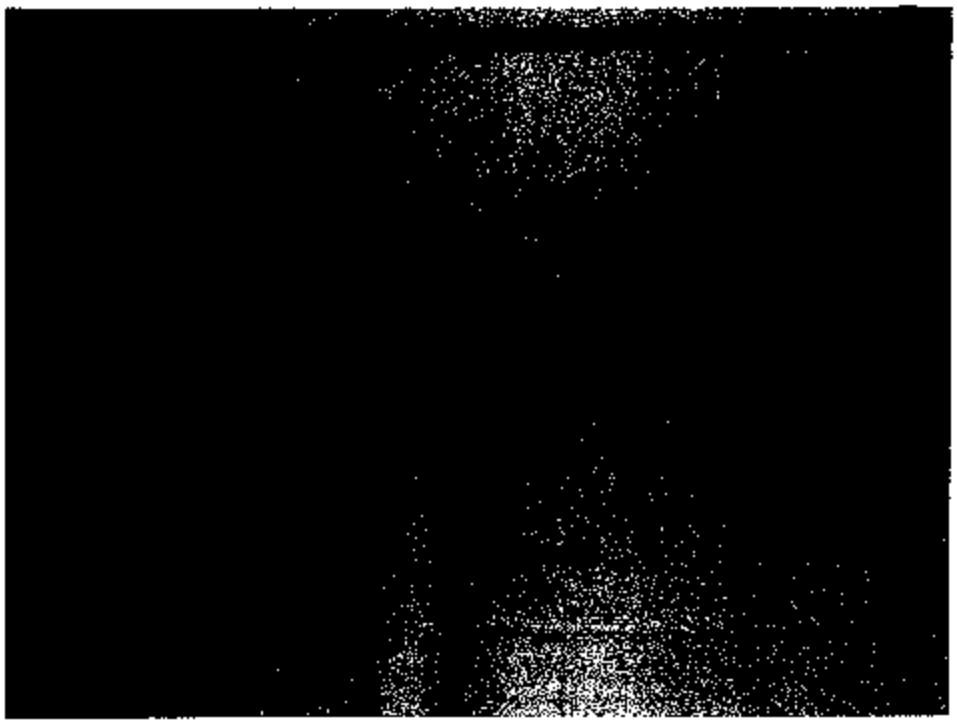
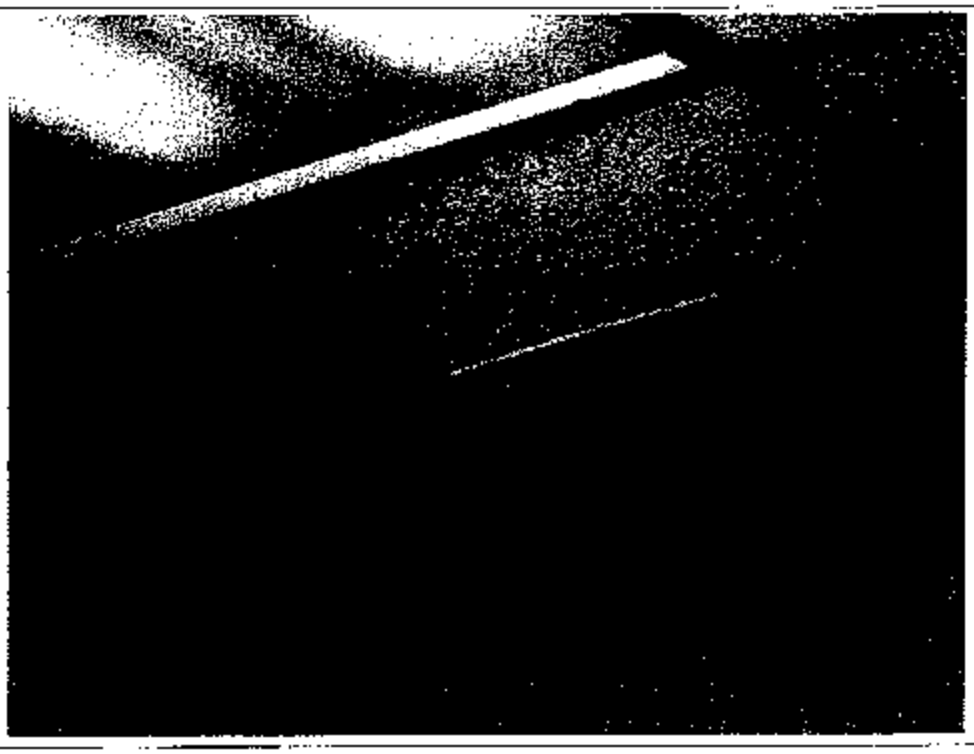


Photo No.	Date:
38	4/1/04

Description:

Office #219A – Water Damaged Ceiling Tile



URS

PHOTOGRAPHIC RECORD

Client Name:	Site Location:	Project No.
Army National Guard	Somerset Armory	39741508

Photo No.	Date:
39	4/1/04

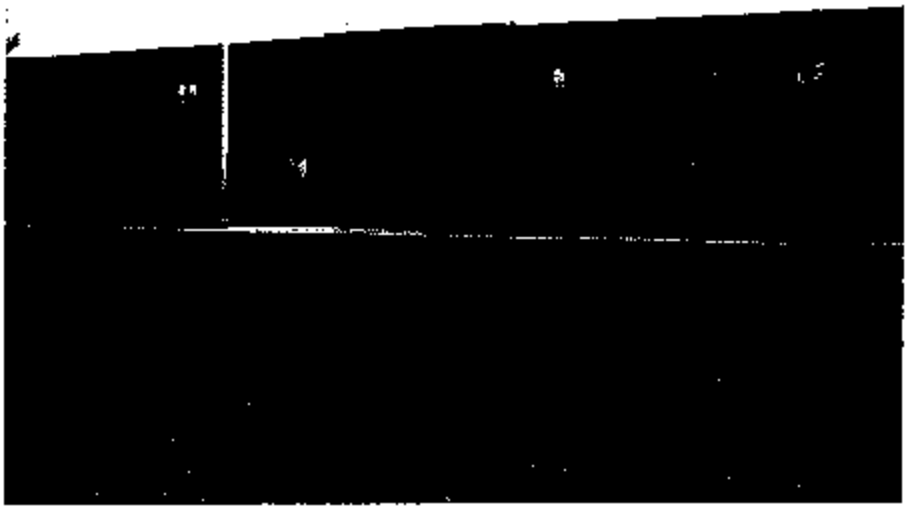
Description:

Somerset Armory

Photo No.	Date:
40	4/1/04

Description:

Somerset Armory



APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

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 ere 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 leed (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 H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15, 30 DECEMBER 2002)

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose

1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References

Related publications are listed below.

a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
b. AR 11-34 (The Army Respiratory Protection Program).
c. AR 40-5 (Preventive Medicine).
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII.
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 5th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ (**PREFERRED METHOD**)- Pre moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

[redacted]

(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

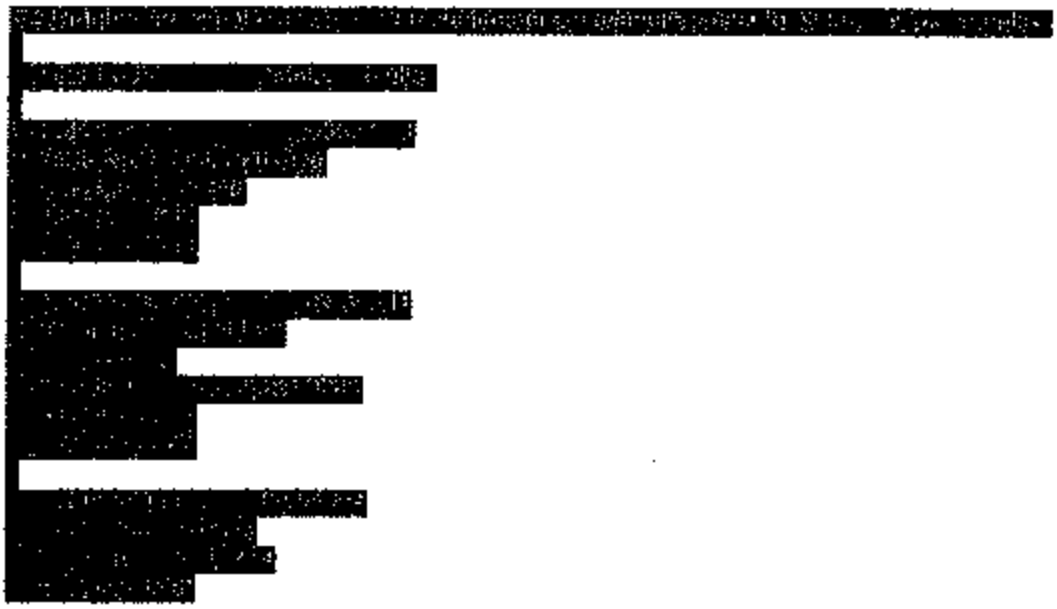
Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-3381IM

APPENDIX E (Continued)

800-247-6628
800-358-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472



E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From | Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75 \text{ ug}}{100 \text{ cm}^2} \quad \frac{929 \text{ cm}^2}{1 \text{ sq ft}}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 \text{ug/sq ft}$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft – Square foot

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address	Point of Contact *(name & phone #)*
	Samples Collected By

Sampled Facility	City	State	Location *(bldg/area)*

Description of Operation	Date Collected	Date Shipped

Analysis Desired

Sampling Data

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	___ Persons Exposed	___ Hrs/Day	Method of Collection
Analysis Desired			
Sampling Data			

Sample No.								
Pump No.								B
Time On								L
Time Off								A
Total Time (min)								N
Flow Rate (LPM)								K
Volume (liters)								
GA/BZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer
Comments to Lab:		

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

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Industrial Hygiene Survey Report

National Guard Facility
Somerset Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Somerset Readiness Center** **1060 Hamilton Street** **Somerset, NJ, 08873**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**February 27, 2013**
Report Date:	**April 4, 2013**

Non-Responsive

Senior Industrial Hygienist

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on February 27, 2013, at the Somerset Readiness Center located at 1060 Hamilton Street, Somerset, NJ 08873. The survey was performed by Mr. Non-Responsive.

1. Lead bulk, surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in three locations. See Section 3.0 for sampling results.

2. Lighting levels met the American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in all locations. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Relative humidity levels were below the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 177 recommended guideline of 30-60% in four locations.

    b. Temperature levels were below the ASHRAE recommended guideline of 68-79 degrees F in three locations.

    See Section 5.0 for detailed sampling results

4. No deleterious conditions or factors that could affect indoor air quality were observed at the time of this survey.

Section 2.0 Operation Description & Observations

The Somerset Readiness Center is a 50,000 square foot administrative facility with a drill hall, offices, classrooms, and converted firing range/storage area. There were approximately 20 full-time employees stationed at this facility at the time of this survey.

The building was initially constructed in the 1980s. It is a two-story structure with a brick exterior. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, floor tile, and carpet.

The Heating, Ventilation, and Air-Conditioning (HVAC) system consists of a natural-gas fired forced hot air furnace for heat. Air conditioning was reported to be central but was not confirmed.

The area of the building that was once a firing range has been converted into a storage area. No firing range components remain.

There is no child-care facility in the building.

Overall housekeeping practices were good.

No ergonomic concerns were reported.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Bulk (%)	Air ug/m^3	Surface ug/ft^2
1	Drill Hall	*	<5.2	*
2	LTC [redacted] Office	*	<5.2	*
3	Blank	*	<3	*
4	Drill Hall – Floor Ctr.	*	*	<110
5	Drill Hall - Light Switch Box	*	*	<110
6	**Drill Hall - Bulletin Board**	*	*	**210**
7	**Food Services - Heater**	*	*	**5200**
8	LTC [redacted] -Shelf	*	*	<110
9	218 Cabinet	*	*	<110
10	215 Frig	*	*	<110
11	211 Cabinet	*	*	<110
12	203 - Shelf	*	*	<110
13	206 - Shelf	*	*	<110
14	108 shelf	*	*	<110
15	101 - Cabinet	*	*	<110
16	**Converted Firing Range - Floor**	*	*	**320**
17	Converted Firing Range - Contents	*	*	<110
18	Converted Firing Range – Outside Entrance	*	*	110
19	Laundry - Frig	*	*	<110
20	Exercise Room - Stereo	*	*	<110
21	224 – TV Stand	*	*	<110
22	Veteran Services. - Classroom	*	*	<110
-	**Criteria**	**0.5**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following locations:

  - Drill Hall - Bulletin Board
  - Food Services – Heater
  - Converted Firing Range - Floor

  Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of 200 ug/ft^2.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. K98364). The light meter was last calibrated in April 2012. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Food Services Dining 2nd Floor	61.3	10	Yes
Exercise Room	67.1	30	Yes
Corridor – 2nd Floor	25.3	5	Yes
Men's Toilet	19.7	5	Yes
225 Conference Meeting	37.9	30	Yes
224 Conference Meeting	54.2	30	Yes
215 Copy Room	63.8	10	Yes
221 Office	46.9	30 - 50	Yes
221A Office	33.9	30 - 50	Yes
221B Office	76.1	30 - 50	Yes
200 Office	91.7	30 - 50	Yes
202 Office	45.8	30 - 50	Yes
Women's Toilet	41.1	5	Yes
Men's Toilet	71.9	5	Yes
211 Conference Meeting	81.2	30	Yes
211A Office	40.9	30 - 50	Yes
211C Office	92.2	30 - 50	Yes
203 Office	48.2	30 - 50	Yes
203A Office	70.2	30 - 50	Yes
203B Office	44.7	30 - 50	Yes
204 Conference Video	87.6	50	Yes
205 Conference Meeting	56.1	30	Yes
206 Office	30.1	30 - 50	Yes
208 Office	43.8	30 - 50	Yes
108 Office	41.4	30 - 50	Yes
109 Office	58.6	30 - 50	Yes
Lobby	37.8	10	Yes
103 Conference Meeting	32.7	30	Yes
101 Office	50.4	30 - 50	Yes
102 Office	57.7	30 - 50	Yes
102A	94.0	30 - 50	Yes
Corridor - Recruiting	31.0	5	Yes
Drill Hall	44.0	10	Yes
Electrical Room	36.4	30	Yes
Boiler Room	40.1	30	Yes

Food Services Prep	51.8	50	Yes
Converted Firing Range - Storage	13.2	10	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Section 5.0 Indoor Air Quality

Survey measurements were made for ventilation and comfort parameters (carbon dioxide, temperature, carbon monoxide and relative humidity). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature and relative humidity ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (◦F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	45.7	87.1	490	0.2
221 Office	**67.6**	31.9	577	1.5
200 Office	68.7	31.4	529	0.7
203B Office	68.9	**29.4**	751	0.4
204 Conference	68.4	**29.0**	901	0.4
109 Office	68.9	31.0	546	0.0
101 Office	**67.6**	**28.4**	601	0.2
102 Office	**66.9**	**28.7**	667	0.1
Criteria	**68-79**	**30-60**	**<1,190**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements were below the recommended 68°F in three areas. Temperature should be maintained at 68-79°F. Relative humidity levels were outside the recommended guidelines in four sampled areas. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction of outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level for this survey. For this survey, carbon dioxide levels did not exceed the recommended ceiling of 1,190 ppm. This is an indication that outdoor air ventilation is adequate.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following observation were noted:

    - Overall housekeeping was good.
    - No deleterious conditions or factors that could affect indoor air quality were observed at the time of this survey.

Section 6.0 Suspect Asbestos Containing Building Materials

The following suspect ACM was noted at the time of this survey:

1. Pipe insulation on the feed lines to the heater in the corridor leading to the laundry room was observed. The insulation was damaged. A sample was collected for analysis. Sample results indicate no asbestos was detected.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	K98364	4/2012	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	2/26/13	2.53 LPM
SKC Air Sampling Pump	647610	2/26/13	2.53 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

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:**	3KNJ Somerset	**Chain Of Custody:**	515231		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Somerset	**Date Submitted:**	2/28/2013		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive		
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	3/6/2013	**Report Date:**	3/6/2013

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
13041152	1	Flame	Air	572	N/A	5.2	ug/m³	<3	<5.2	ug/m³	
13041153	2	Flame	Air	577	N/A	5.2	ug/m³	<3	<5.2	ug/m³	
13041154	3	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
13041155	4	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041156	5	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041157	6	Flame	Wipe	****	0.108	110	ug/ft²	22	210	ug/ft²	
13041158	7	Flame	Wipe	****	0.108	110	ug/ft²	560	5200	ug/ft²	
13041159	8	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041160	9	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041161	10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041162	11	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041163	12	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041164	13	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041165	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041166	15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041167	16	Flame	Wipe	****	0.108	110	ug/ft²	34	320	ug/ft²	
13041168	17	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13041169	18	Flame	Wipe	****	0.108	110	ug/ft²	12	110	ug/ft²	
13041170	19	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	

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ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	3KNJ Somerset	**Chain Of Custody:**	515231
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Somerset	**Date Submitted:**	2/28/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	3/6/2013 **Report Date:** 3/6/2013

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	
13041171	20	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²
13041172	21	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²
13041173	22	Flame	Wipe	****	0.108	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.

Analy Non-Responsive

Technical Manag Non-Responsive

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) 515231

Pg 1 of 2

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: 3KNJ somerset
2. Job Location: somerset
3. Job #: PO #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone # (410) 942-0273
5. Submitted by: Non-Responsive 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 + Date Due: 3/7/13
☐ 2 Day (NEW)
☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Include [illegible] with Report
☒ Email: Non-Responsive complianceplace.com
☐ 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 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)

Metals Analysis
☐ Pb Paint Chip (QTY)
☒ Pb Dust Wipe (wipe type Ghost) 19 (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 NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHERS	SPORE TRAP	TAPE	SWAB
0805 1150	1 DH	TABLE	2/27/13	572					✓		✓						
0807 1151	2	BEAM Ref SRUS OFF		577													
	3	BLANK		–													
LOT 3/23/18 EXP 9/15	4 DH	Center Floor			100 cm²												
	5 DH	Light BOX															
	6 DH	Top Bulletin BD.															
	7	K - HEATER TOP															
	8	KFC Beale Shelf															
	9	OFF 218 CABINET															
	10	BRURM 215 Frig															
	11	OFF 211 CABINET															
	12	OFF 203 SHELF															

CLIENT CONTACT
(LABORATORY STAFF ONLY)

Date/Time: Contact: By:

Date/Time: Contact: By:

Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY:
(CUSTODY)

1. Date/Time RCVD: 2/28/13 0930 Via: FEDEX By (Print):
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Date: / / Time: Initials:
4. Comments: 7945 0135 0256

OWI (410) 247-2024 159202 210 REV. 6.08

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515231 pg 2 of 2

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

Submittal Information:
1. Job Name: 3KNJ
2. Job Location: SOMERSET
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive
5. Submitted by: Non-Responsive 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:	☐ Immediate ☐ 3 Day	☒ Inc Non-Responsive th Report
☐ 24 Hours Time Due:	☑ Next Day ☐ 5 Day +	☒ Su Non-Responsive compliance place.com
Comments:	☐ 2 Day Date Due:	☐ Fa us.army.mil
	☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	☐ Ve 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) 19 (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)

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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 NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
Lot 3/23/12 Exp 9/15 13	OFF 206 DESK	2/27/13		100 cm²				✓								
14	OFF 108 SHELF															
15	OFF 101 CABINET															
16	CFR - FLOOR															
17	CFR - CONTENTS															
18	CFR - OUT ENTRANCE															
19	LAUNDRY TRIG															
20	EXER RM STEREO															
21	CONF 224 TV STND															
22	VET SRVS CLASSROOM															
23	L-HALL HEATER						✓				✓					

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: Date: / / Time: Initials:
4. Comments:

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	3KNJ Somerset	**Chain Of Custody:**	515231
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Somerset	**Date Analyzed:**	3/6/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**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
13041174	23	NAD	--	--	--	--	40	--	--	--	--	60	PI	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