Industrial Hygiene Survey Report

For

West Virginia Army National Guard
(WVARNG)

at

Armed Forces Reserve Center
Firing Range
Huntington, West Virginia

Prepared by:
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P.O. Box 229
Lake Zurich, Illinois 60047

February 11, 2000

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Appendices

Executive Summary

At the request of the West Virginia Army National Guard (WVARNG), field personnel representing the NGB ARNG Region North IH Office, conducted an industrial hygiene survey in the Huntington Armed Forces Reserve Center Firing Range located in Huntington, West Virginia on December 16, 1999. The range is located in a stand-alone building. This survey, which is the third phase of certification of this indoor firing range, was conducted as part of the WVARNG occupational safety and health program to evaluate potential health hazards associated with firing weapons indoors.

The concentrations of lead found in both personal and area samples while five shooters fired 1000 rounds of 9 MM Ball and 40 rounds of 40 caliber ammunition over approximately 60 minutes were below the allowable exposure levels for Guardsmen exposed less than 30 days per year in either "safe" or "limited use ranges".

Supply and exhaust blowers had to be "hot wired" so that they could operate during the firing exercise. Blower operation should be investigated to assure proper functioning. This firing range was under a slight negative pressure with respect to surrounding areas when both the supply and exhaust blowers were operating. Airflow velocity at the firing line averaged 83 feet per minute (fpm). Mid-range airflow velocity was 63 fpm. Average airflow velocity in each lane exceeded 50 fpm both at the firing line and at mid-range. Smoke candle tests indicated that airflow was laminar.

Shooters and the Range Master wore earmuffs, or earplugs, and safety glasses.

Floor and trap areas were dirty. The floor in the range was covered with a coating of gray dust. A large accumulation of spent shot and gray dust was found in the trap area. Spent shells were manually picked up at the end of the exercise. Straw brooms were present in the range, but were not used to clean up after the firing exercise.

West Virginia Army National Guard
Armed Forces Reserve Center Firing Range
Huntington, West Virginia
December 16, 1999

Findings	Recommendations	RAC
Airborne Lead Levels		
All air sample results, both personal and area, were well below the allowable exposure levels for Guardsmen exposed less than 30 days per year in either "safe" or "limited use ranges".	No further action.	4
Ventilation System		
Supply and exhaust blowers had to be "hot wired" so that they could operate during the firing exercise.	Blower operation should be investigated to assure proper functioning.	2
This firing range was under negative pressure with respect to surrounding areas. Overall average airflow velocities at about the firing line and at mid range were 83 and 62 feet per minute (fpm), respectively. Individual lane average airflow velocities at the firing line ranged from 80 to 86 fpm. At mid range, they were anywhere from 53 to 75 fpm.	Correct the blower control system malfunction to assure that both blowers function as designed.	3
Housekeeping		
The floor in the range was covered with a coating of gray dust. A large accumulation of spent bullets and gray dust was found in the trap area.	Clean the range thoroughly using a high efficiency particulate air (HEPA) vacuum or a wet mop technique. Develop a procedure to clean the range after each use, or as needed. Remove straw brooms from the range.	2
Personal Protective Equipment		
PPE was found to be in acceptable condition.	No further action.	4

II. Report

A. Introduction

Per the request of the West Virginia Army National Guard (WVARNG), Non-Responsive CIH, representing the NGB ARNG Region North IH Office, conducted an industrial hygiene survey in the Armed Forces Reserve Center Firing Range located in Huntington, West Virginia on December 16, 1999. This survey, which is the third phase of certification of this indoor firing range, was conducted as part of the WVARNG occupational safety and health program to evaluate potential health hazards associated with firing weapons indoors.

The Regional Industrial Hygiene Office of the National Guard Bureau conducted this survey in the interest of preventing employee illness and in meeting legal obligation where applicable. Based on information provided, every effort was made to conduct a thorough survey covering the parameters considered. Results and recommendations are based on information provided, field measurements, and conditions observed during the survey. Changes in work conditions and practices can alter the outcome of the survey.

B. Site Description

The Armed Forces Reserve Center is located in a rural/residential area of Huntington, West Virginia. The Center firing range is a single story stand-alone structure that occupies approximately 23,000 square feet of space. The range itself is 65' in length from the supply air plenum to the bullet stop and 50' from the firing line to the bullet stop, 23' wide, and approximately 10' high. It has five firing lanes that have hand crank target retrieval capability. The range ventilation system consists of roof-mounted supply air and exhaust blowers. Exhaust air is not re-circulated back into the range. For the most part, 9 MM pistols using leaded ammunition are fired in the range.

C. Scope of Work

Airborne sampling for lead was performed during a firing exercise. The ventilation system was evaluated and air velocity profiles were obtained at the firing line and at mid-range. Health Hazard Information Module (HHIM) Field Survey (See Appendix F) and Ventilation Measurement Data forms (See Appendix G) were completed. Photographs were taken of various areas of the facility (See Appendix I).

D. Methodology and Assessment Criteria

Each assessment made during this survey was evaluated using the *U.S. Army Occupational Health Risk Assessment Codes*. See Appendix H.

Air sampling results are compared to allowable levels promulgated in a draft of NGB 385-15, Appendix A. The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL), National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Level (REL) and the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for lead are also presented in this report. The regulated and recommended exposure levels are listed with the sampling results in Appendix D. Exposure Potential Codes (EPCs) and Priority Action Codes (PACs) were established and indicated on the HHIM form for the firing exercise.

Firing range airflow velocities were evaluated using criteria presented in a draft of NGR 385-15, dated 23 July 1999.

E. Discussion

1. Airborne Lead Levels

a. Discussion/Findings

Airborne lead levels for personal samples collected over approximately 60 minutes on four shooters ranged from less than (<) 0.0046 to 0.017 milligrams of lead per cubic meter of air (mg/m^3). A fifth shooter was also sampled, but the sample pump malfunctioned so that an accurate assessment of exposure cannot be made. Based on periodic checks of pump function made during the firing exercise, it is estimated that the pump ran for about 50 minutes. The estimated exposure for this individual is < 0.0075 mg/m^3. Area samples, one each, were collected both within and immediately outside the range during the firing exercise. Results for these samples were < 0.0032 and < 0.0033 mg/m^3 lead, respectfully. See Table D-1, Appendix D.

Guardsmen who use this range do not fire more than 30 days per year. A draft of NGB 385-15, Appendix A, dated 23 July 1999, indicates that individuals who are in the range for less than 30 days per year can be exposed to as much as 0.049 mg/m^3 for 8 hours during each visit. All personal and area sample results were well below this level both as a function of actual sample concentration as well as on an 8-hour time weighted basis.

b. Recommendation

No further action. RAC-4.

2. Ventilation System

a. Discussion/Findings

The firing range is equipped with both a makeup and an exhaust blower. These units are located on the roof. On the day of the survey the control system for at least one of these blowers was malfunctioning. State personnel were able to "hot wire" the units so that they would operate to facilitate this industrial hygiene survey. The range was under a slightly negative pressure with respect to surrounding areas with both blowers operating. Overall average airflow velocities at about the firing line and at mid range were 83 and 62 feet per minute (fpm), respectively. Individual lane average airflow velocities at the firing line ranged from 80 to 86 fpm. At mid range, they were anywhere from 53 to 75 fpm. A draft of NGR 385-15, paragraph 3-2a(2)(a), dated 23 July 1999, requires an airflow of at least 50 fpm in each lane at the firing line. Based on this, survey findings were acceptable. Smoke candle tests indicated that airflow was laminar. See Appendix E.

b. Recommendation

Correct the blower control system malfunction to assure that both blowers function as designed. RAC-2.

3. Housekeeping

a. Discussion/Findings

Spent shells were manually picked up at the end of the exercise. Straw brooms were present in the range, but were not used to clean up. Floor and trap areas were dirty. The floor, especially down range from the firing line, was covered with a coating of gray dust. A large accumulation of spent shot and gray dust was found in the trap area. Section 4-4 of the draft of NGB 385-15, dated 23 July 1999, calls for the range to cleaned at the end of each firing day. However, the NGB and Department of Army are discussing changes to the regulation regarding operational cleaning requirements. The proposed frequency for cleaning ranges is after 40 hours of operation. The area that should be cleaned extends from 15 feet in front of the firing line to the supply air plenum located behind the firing line because this is where normal activities take place. It appeared as if this range has never been cleaned. Consideration should be given to contracting out the initial cleanup to professionals licensed to perform this task. Routine cleaning after each use, or as needed, of the range could then be handled by National Guard personnel if they are trained and properly equipped to do so.

b. Recommendation

Clean the range thoroughly using a high efficiency particulate air (HEPA) vacuum or a

wet mop technique. Develop a procedure to clean the range after each use as described herein, or as needed. Remove straw brooms from the range. RAC-2.

4. Personal Protection Program

a. Discussion/Findings

Shooters wore either ear muffs of ear plugs as well as safety glasses during the firing exercise. PPE was found to be worn properly and in acceptable condition.

b. Recommendation

No further action required at this time. RAC-4.

Appendix A

Site Point of Contact (POC)

MAJ [redacted]

CPT [redacted]

LTC [redacted]

MAJ [redacted]

Appendix B

METHODOLOGY

1. Air Sampling

a. Sample Types.

Two types of air sampling were performed during the survey, area air sample (A) and breathing zone sample (BZ). Table B-1 lists the task/operation sampled, contaminant, and sample type. Table B-2 lists the sampling method used for each task/operation as per NIOSH (National Institute of Occupationel Safety and Health) recommended methods. Table B-2 summarizes the sampling media and flow rate used to sample the operation/task.

Table B-1
Task/Operation Sampling Type and Air Contaminant
West Virginia Army National Guard
Armed Forces Reserve Center Firing Range
Huntington, West Virginia
December 16,1999

Task or Location	Sample Type	Contaminant(s)
Firing Exercise	BZ/A	Lead

Table B-2
Air Contaminant Sampling Method per Task or Location
West Virginia Army National Guard
Armed Forces Reserve Center Firing Range
Huntington, West Virginia
December 16, 1999

Task/Operation	Contaminant	Sample Media	Approximate Flow Rate (LPM)
Firing Exercise	Lead	PVC 5 micron filters	2

b. Sampling Strategy.

The sampling strategy used in this survey was designed to characterize employee exposure to airborne lead generated while firing leaded ammunition.

1) Breathing zone samples, which were taken outside any personal protective equipment, were collected to determine employee exposure while firing. Partial-period consecutive breathing zone samples were used to determine 8-hour exposure levels.

2) Area air samples were also taken to evaluate the efficiency of the ventilation system. These samples were taken at a height to simulate the most likely employee exposures.

c. Instrumentation, Calibration and Sample Analysis

1) Gilian pumps were used to sample the firing exercise. A standard rotameter was used to calibrate the pumps with the appropriate cassette in line prior to and at the conclusion of sampling.

2) Samples were capped and taken to NATLSCO, an American Industrial Hygiene Association certified laboratory, for analysis. OSHA ID-121/OSHA ID-125G Atomic Absorption/Inductively Coupled Plasma was used to determine lead levels.

d. Exposure Levels.

Sampling results were determined for the actual sample period and then calculated as an 8-hour time weighted average (TWA) assuming no exposure during the remainder of the day. All results were evaluated by comparing them to the OSHA PEL for lead. NIOSH and ACGIH values for lead are also presented in this report. TWA calculations were performed as follows:

8-hour TWA = sample concentration x sampling time in minutes divided by 480.

2. Ventilation Measurements.

Air velocities were obtained at the firing line and at mid-range using a TSI hot wire anemometer. The cross sectional area of the range was divided into 25 smaller areas and air velocities were measured approximately in the center of each of these areas and then recorded. Individual area velocities were obtained by taking three velocity readings at a given area, and averaging them. Every attempt was made to take these readings at random intervals without viewing the anemometer digital read out to avoid bias. Overall average cross-sectional velocity was calculated by summing the individual area average velocities and dividing that sum by 25.

Appendix C

NATLSCO

LABORATORY ANALYSIS REPORT

LABORATORY, K-2
1 Kemper Drive • Long Grove, IL 60049-0075 • (847) 320-2488
Fax (847) 320-4331 Toll Free (888) 576-7522
www.natlsco.com

REPORT DATE FEB 14, 2000
SAMPLES REC'D. DEC 17, 1999
REQUEST NUMBER 334192
PAGE NUMBER 1 OF 3 OF REQUEST.

TO: Non-Responsive
BRIDGE ENV. MANAGEMENT
P.O. BOX 229
LAKE ZURICH IL 60047
USA

Sample Number	Analysis Requested	Results	
		micrograms	mg/m3
99063918	TOTAL DUST	< 100	< 1.4
	LEAD IN AIR	< 0.5	< 0.0071
		micrograms	mg/m3
99063916	TOTAL DUST	< 100	< 1.4
	LEAD IN AIR	< 0.5	< 0.007
		micrograms	mg/m3
99063896	TOTAL DUST	130	2.1
	LEAD IN AIR	< 0.5	< 0.0079
		micrograms	mg/m3
99063898	TOTAL DUST	< 100	< 1.5
	LEAD IN AIR	< 0.5	< 0.0074
		micrograms	mg/m3
99063903	TOTAL DUST	< 100	< 0.64
	LEAD IN AIR	< 0.5	< 0.0032
		micrograms	mg/m3
99063897	TOTAL DUST	< 100	< 0.81
	LEAD IN AIR	2.1	0.017
		micrograms	mg/m3
99063917	TOTAL DUST	< 100	< 0.67
	LEAD IN AIR	< 0.5	< 0.0033
		micrograms	mg/m3
99063914	TOTAL DUST	< 100	< 0.88
	LEAD IN AIR	0.9	0.0079
		micrograms	mg/m3
99063900	TOTAL DUST	< 100	< 0.83
	LEAD IN AIR	0.5	0.0041

COMMENTS:
IF PRESENT, DE MEANS DESORPTION EFFICIENCY

Respectfully submitted,
Non-Responsive

Manager of Operations
Environmental Sciences Laboratory

ACCREDITED BY THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION

NATLSCO

LABORATORY ANALYSIS REPORT

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REPORT DATE FEB 14, 2000
SAMPLES REC'D. DEC 17, 1999
REQUEST NUMBER 334192
PAGE NUMBER 2 OF 3 OF REQUEST.

TO: Non-Responsive
BRIDGE ENV. MANAGEMENT
P.O. BOX 229
LAKE ZURICH IL 60047
USA

Sample Number	Analysis Requested	Results	
		micrograms	mg/m3
99063909	TOTAL DUST	< 100	< 0.91
	LEAD IN AIR	< 0.5	< 0.0046
		micrograms	mg/m3
99063919	TOTAL DUST	< 100	< 1.5
	LEAD IN AIR	< 0.5	< 0.0075
		micrograms	
BLANK	LEAD IN AIR (BLANK)	1.1	
		SUBTRACTED	

COMMENTS:
IF PRESENT, DE MEANS DESORPTION EFFICIENCY

Respectfully submitted,

Non-Responsive

Manager of Operations
Environmental Sciences Laboratory

ACCREDITED BY THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION

NATLSCO

LABORATORY ANALYSIS REPORT

LABORATORY, K-2
1 Kemper Drive • Long Grove, IL 60049-0075 • (847) 320-2488
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www.natlsco.com

REPORT DATE FEB 14, 2000
SAMPLES REC'D. DEC 17, 1999
REQUEST NUMBER 334192
PAGE NUMBER 3 OF 3 OF REQUEST.

TO: Non-Responsive
BRIDGE ENV. MANAGEMENT
P.O. BOX 229
LAKE ZURICH IL 60047
USA

LLD *	ANALYSIS REQUESTED	METHODOLOGY	CAS #
.5	LEAD IN AIR MMW	OSHA ID-121/OSHA ID-125G ATOMIC ABSORPTION/INDUCTIVELY COUPLED PLASMA	7439-92-1
100	TOTAL DUST MMW	NIOSH 0500 WEIGHT GAIN	

COMMENTS:
CONCENTRATION CALCULATED USING AIR VOLUMES SUPPLIED BY CLIENT
* LLD REPORTED IN MICROGRAMS
* MODIFICATIONS MAY BE MADE TO ABOVE METHODS TO OPTIMIZE RESULTS

Respectfully submitted,

Non-Responsive

Manager of Operations
Environmental Sciences Laboratory

ACCREDITED BY THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION

NC0614-1 30M 12-98

Appendix D

Table D-1
Air Sampling Results
West Virginia Army National Guard
Armed Forces Reserve Center Firing Range
Huntington, West Virginia
December 16, 1999

Sample Number & Type	Worker/ Location	Analyte	Sample Time (min)	Concentration		OSHA PEL*		NIOSH REL*		ACGIH TLV*	
				Actual	TWA	TWA	STEL	TWA	Peak	TWA	STEL
99063897 BZ	[redacted] (Lane 5)	Lead	60	0.017	0.0021	0.05	N/A	Ca	N/A	5	N/A
99063914 BZ	[redacted] (Lane 3)	Lead	57	0.0079	0.00094	0.05	N/A	Ca	N/A	5	N/A
99063900 BZ	[redacted] (Lane 4)	Lead	60	0.0041	0.00051	0.05	N/A	Ca	N/A	5	N/A
99063909 BZ	[redacted] (Lane 1)	Lead	53	<0.0046	<0.00051	0.05	N/A	Ca	N/A	5	N/A
99063919 BZ	[redacted] (Lane 2)	Lead	50[4]	<0.0075[4]	<0.0078[4]	0.05	N/A	Ca	N/A	5	N/A
99063903 Area	Interior of Range	Lead	74	<0.0032	<0.0005	0.05	N/A	Ca	N/A	5	N/A
99063917 Area	Exterior of Range	Lead	73	<0.0033	<0.0005	0.05	N/A	Ca	N/A	5	N/A
			-	1.1 ug	-	-	-	-	-	-	-

Table D-1
Air Sampling Results
West Virginia Army National Guard
Armed Forces Reserve Center Firing Range
Huntington, West Virginia
December 16, 1999

Sample Number & Type	Worker/ Location	Analyte	Sample Time (min)	Concentration		OSHA PEL[1]		NIOSH REL[1]		ACGIH TLV[1]	
				Actual	TWA	TWA	STEL	TWA	Peak	TWA	STEL
99039408	Blank	Lead		(Subtracted)							

Notes:
1. Units for lead are milligram per cubic meter (mg/M^3).
   Units for lead blanks are milligrams
2. Abbreviations:
   OSHA PEL = Occupational Safety and Health Administration Permissible Exposure Limit (1989 PEL Values)
   NIOSH REL = National Institute of Occupational Safety and Health Recommended Exposure Level
   ACGIH TLV = American Conference of Governmental Industrial Hygienists Threshold Limit Value
   TWA = Time Weighted Average
   STEL = Short Term Exposure Limit
   < means Less Than
   N/A = Not Available
3. Samples analyzed at NATLSCO.
4. Sample time estimated at 50 minutes. Pump malfunctioned toward the end of the firing exercise.

Appendix E

West Virginia Army National Guard

Armed Forced Reserve Center Firing Range

Huntington, West Virginia

Cross Sectional Air Velocity Profile @ Firing Line

December 16, 1999

Lane 5	Lane 4	Lane 3	Lane 2	Lane 1
40	50	55	55	50
80	80	85	65	80
100	110	105	85	75
100	90	95	105	100
90	80	90	90	95
(82)	(82)	(86)	(80)	(80)

Notes:

1. Measurements made with a TSI hot wire anemometer.
2. Overall average air velocity was calculated to be 82 feet per minute (fpm). Values in parentheses are individual lane average airflow velocities.
3. Measurements were taken facing firing line, approximately two feet down range to minimize airflow interferences from the firing line structure.

West Virginia Army National Guard

Armed Forced Reserve Center Firing Range

Huntington, West Virginia

Cross Sectional Air Velocity Profile @ Mid-Range

December 16, 1999

Lane 5	Lane 4	Lane 3	Lane 2	Lane 1
35	20	40	45	50
45	40	60	55	75
75	60	65	65	85
70	70	65	75	85
70	75	80	85	80

West Virginia Army National Guard

Armed Forced Reserve Center Firing Range

Huntington, West Virginia

Cross Sectional Air Velocity Profile @ Mid-Range

December 16, 1999

Lane 5	Lane 4	Lane 3	Lane 2	Lane 1
(59)	(53)	(62)	(65)	(75)

Notes:

1. Measurements made with a TSI hot wire anemometer.
2. Overall average air velocity was calculated to be 63 feet per minute (fpm). Values in parentheses are individual lane average airflow velocities.

Appendix F

HHIMS Industrial Hygiene Survey Form

Front page

ARLOC: 5 4 0 0 0 | Installation: ARMED FORCES RESERVE CENTER - FINCASTLE | Building: BUILDING 12 | Room Number:

Location | Operation | Survey Date: 9 9 / 12 / 16 (month / day) | Evaluator-HNUS | Macom: NG | Submacom: XX | RAC

Unit / Organization (45): HHD 2-159TH SPECIAL FORCES; SUPPORT COMPANY BATTALION; COMPANY

Non-Responsive | Ms. | Rank: LTC

Contact Telephone Number: 304 561 6130 | DSN | Commercial | Frequency (hrs/day): <01 | No. CIVs | No. MIL | Contractors | No. LOCs

Lab Hoods | Vapor Degreasers | Spray Booths | Open Surface Tanks | Ventilation Units

Controls Present (if >6 , continue in comments)[25]	Evaluation (25 characters max)	Unit code	Controls Required (25 characters max)
DILUTION VENTILATION			

Gloves	e*	R	U
acid			
cold surfaces			
hot surfaces			
NBC agents			
oil			
solvents			
surgical gloves			
leather / cotton			
other			

Respirator	e*	R	U	Manufacturer's Description (10 characters max)	NIOSH TC # or Foreign equivalent (10 characters max)
airline					
abrasive blasting hood					
disposable					
full face air purifying					
1/2 face air purifying					
powered air purifying					
1/4 face air purifying					
self-contained					
other					

Eyes and Face	e*	R	U
chemical splash			
full face shield			
chem/safety impact			
safety impact		X	X
welding helmet			
sunglasses			
welding goggles/glasses			
laser eye protection			
other			

Hearing	e*	R	U
canal caps			
(>85-108 dBA steady) earplugs		X	X
" helmets w/ muffs			
" muffs alone		X	X
(108-118)muff/earplug comb			
muffs and earplugs			
(118 or >) with time limit			
other			
other			

Body	e*	R	U
aprons			
cold weather clothing			
coveralls			
full body suit			
heat reflective			
vest/suit			
safety belt/harness			
special purp. clothing			
other			

Head and Feet	e*	R	U
cold weather boots/hat			
hard hats			
impermeable boots			
safety shoes (conductive)			
safety (nonconductive)			
other			
other			
other			
other			

e* = evaluator's recommendation or agreement

Reminders: ergonomics - dermatitis - physical agents - flammable storage
EYE (permanent) ____ - EYE (portable) ____ - SHW - GMV - LEV

ACO ADM DSA DSN LAB LCK
RAD ECB EPL RHS SPR WEL

Appendix G

Ventilation Measurement Data Form

ARLOC Code: 54 0 - Installation: ARMED FORCES RESCUE FIRING RANGE Building Number: Room Number:

Location Code: Operation Code: Date Measured: year month day

Point of (POC) Contact: Mr. [X] Ms. [ ] LTC [redacted] Non-Responsive

Telephone Number: 304 . 561 . 6130 DSN [ ] Commercial [X]

POC's Address (120 characters max.)

ARMED FORCES RESCUE CENTER
HUNTINGTON, WV 25

Ventilation equipment description / comments

MAKE UP AIR BLOWER

BEST AVAILABLE COPY

Measurement is for a:

duct [ ] lab hood [ ] booth [ ] tool point of operation [ ] canopy hood [ ] welding hood [ ] other FIRING RANGE @ FIRING LINE [ ] vehicle exhaust [ ] upgrade ? [ ]

Instrument Readings in fpm at: 1 foot from the face [ ] the face [ ]

	83*	

* AVERAGE OF 25 AVERAGE READINGS

Instrument Information

Instrument Serial Number: 205006 Instrument Model Number:

Description of device: HOT WIRE ANEMOMETER

Manufacturer's Name: TSI
Manufacturer's Address: ST PAUL MN

Calibration Information

Manufacturer's calibration date: 79 month 01 day 15

Ventilation Measurement Data Form

ARLOC Code 54000 Installation ARMED FORCES RESERVE-FIELD FINANCE Building Number Room Number

Location Code Operation Code Date Measured year month day

Point of Contact (POC) Mr. [X] Ms. [ ] LTC [redacted] Non-Responsive

Telephone Number 304 . 561 . 6130 DSN [ ] Commercial [X]

POC's Address (120 characters max.)

ARMED FORCES RESERVE CENTER
HUNTINGTON, WV

Ventilation equipment description / comments

MAKE UP AIR BLOWER

BEST AVAILABLE COPY

Measurement is for a:

duct [ ] lab hood [ ] booth [ ] tool point of operation [ ] canopy hood [ ] welding hood [ ] other FIELD RANGE [ ] vehicle exhaust [ ] upgrade ? [ ]

Instrument Readings in fpm at: 1 foot from the face [ ] the face [ ]

	63#	

AVERAGE OF 10 AVERAGE READINGS

Instrument Information

Instrument Serial Number 205006 Instrument Model Number

Description of device HOT WIRE ANEMOMETER

Manufacturer's Name TSI
Manufacturer's Address ST PAUL MN

Calibration Information

Manufacturer's calibration date 91 month 01 day 15

Appendix H

Occupational Health Risk Assessment Codes
(Reference: DOD Letter of Instructions 6055.1)

Occupational health risk assessment codes (RACs) are included in this report to quantify health risks to personnel. Risk assessment is an expression of health hazard severity and mishap probability, described in terms of route of exposure, actual exposure, exposure limit standards, potential health effects, duration of exposure, and number of exposed personnel. The following procedure is used to determine the RACs:

STEP 1: This step assesses points to determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

A. Exposure Points Assessed.

Alternate Route of Exposure		Exposure Conditions			
		<CT	Occasionally >CT Always ≤STD	>CT <STD	>STD
AER Possible	NO	0	3	5	7
	YES	1-2	4	6	8

Notes:
AER = Alternate exposure route, such as skin absorption or ingestion.
CT = DoD component threshold that triggers surveillance actions, such as action level.
STD = DoD exposure limit, such as TLV or PEL.
> = Greater than.
< = Less than.
≤ = Less than or equal to.

B. Medical Effects Points Assessed

Condition	Points
No medical effects, such as nuisance noise and nuisance odor	0

Condition	Points
Temporary reversible illness requiring Shopive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling, irreversible illness or death, such as asbestosis or lung cancer	7-8

C. The HHSC is determined by totaling the points assessed and using the following guide.

Total Points*	HHSC
13-16	I
9-12	II
5-8	III
0-4	IV

* Sum of A and B above.

STEP 2: This step uses the following guidelines to assess points to determine the mishap probability category (MPC) for health hazards. The probability of mishap reflects the duration of exposure and the number of exposed personnel.

A. Duration of Exposure Points Assessed

Type of Exposure	Length of Exposure		
	1-8 hr/wk	>8 hr/wk/not continuous	continuous
Irregular/Intermittent	1-2	4-6	NA
Regular/Periodic	2-3	5-7	8

B. Number of Exposed personnel Points Assessed

Number of Exposed Personnel	Points
<5	1-2
5-9	3-4
10-49	5-6
>49	7-8

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

Total Points*	MPC
14-16	A
10-13	B
5-9	C
<5	D

* Sum of A and B above.

STEP 3: The RAC is determined using the following matrix:

	A	B	C	HHSC
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

Appendix I

Photograph Log West Virginia Army National Guard Armed Forces Reserve Center Firing Range Huntington, West Virginia December 16, 1999	
Photo No.	Description
1	Bullet stop looking down range from firing line
2	Contamination at bullet stop
3	Warning signs at entry to range
4	Supply air plenum
5	Contamination and clutter behind bullet trap
6	Outside view of stand-alone firing range

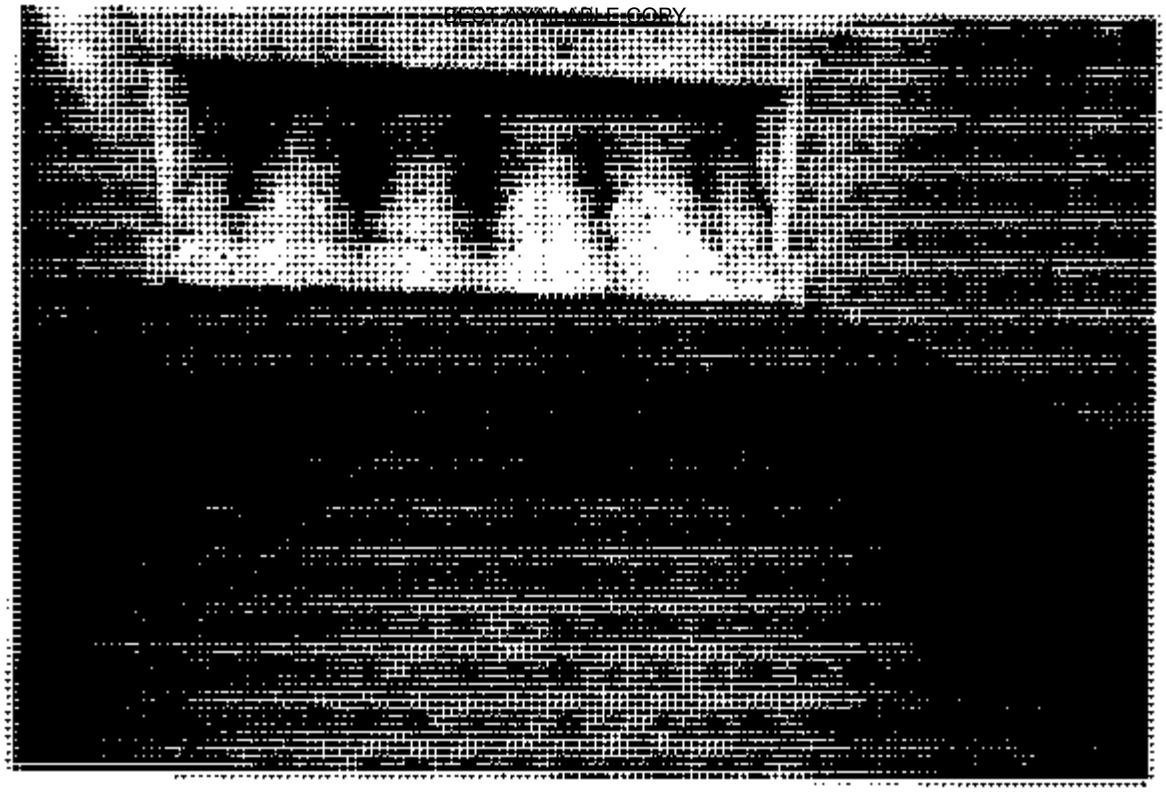
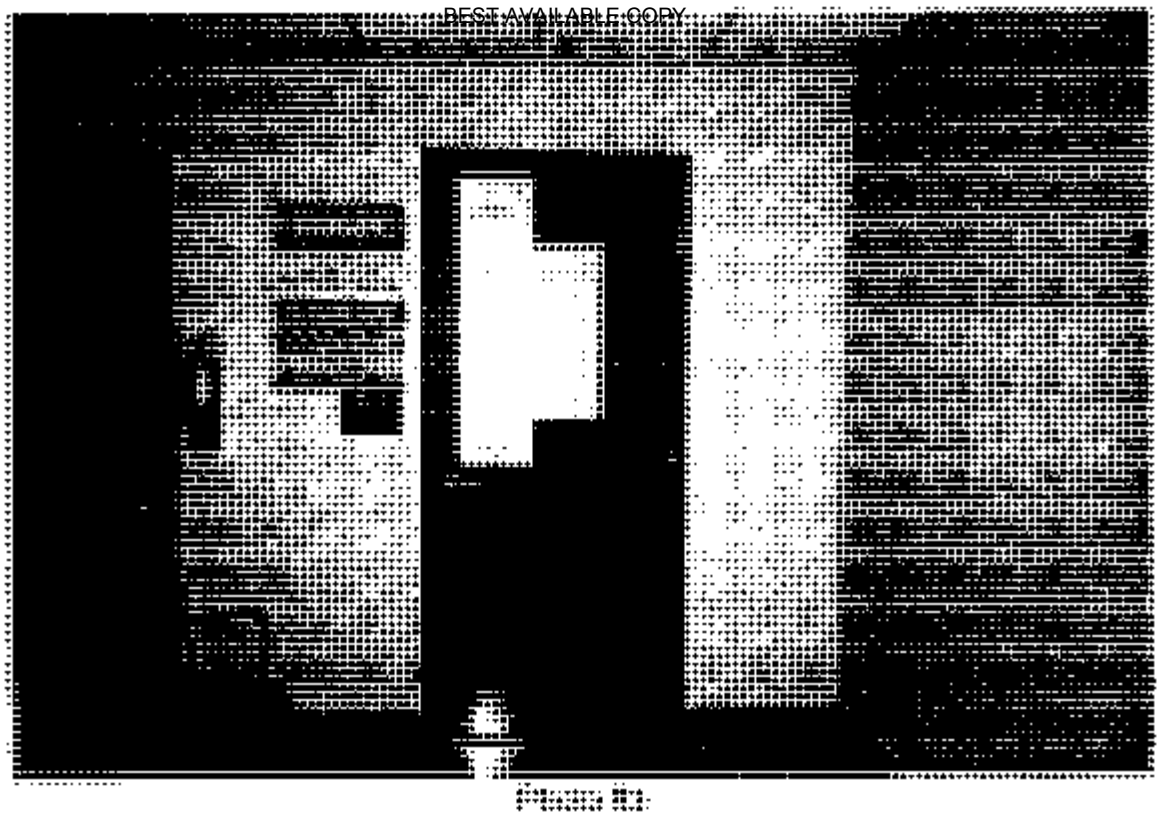


Photo #1

Photo #2



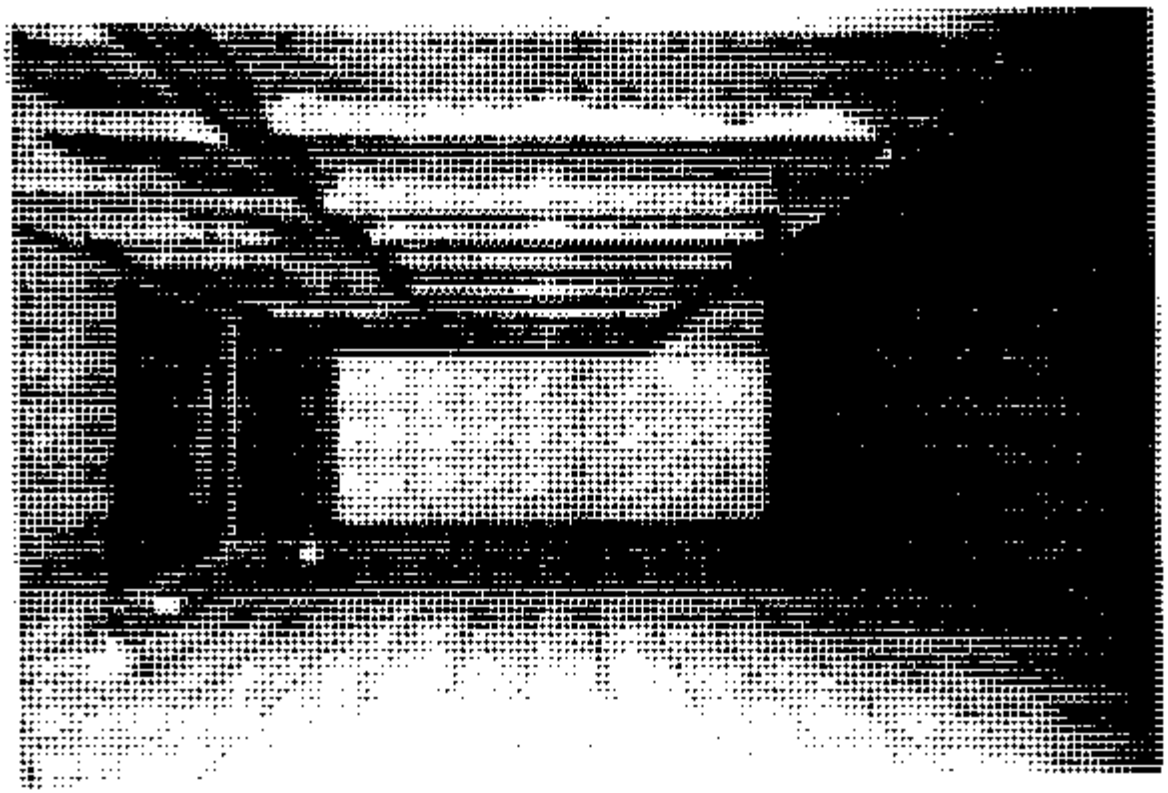


Photo #4

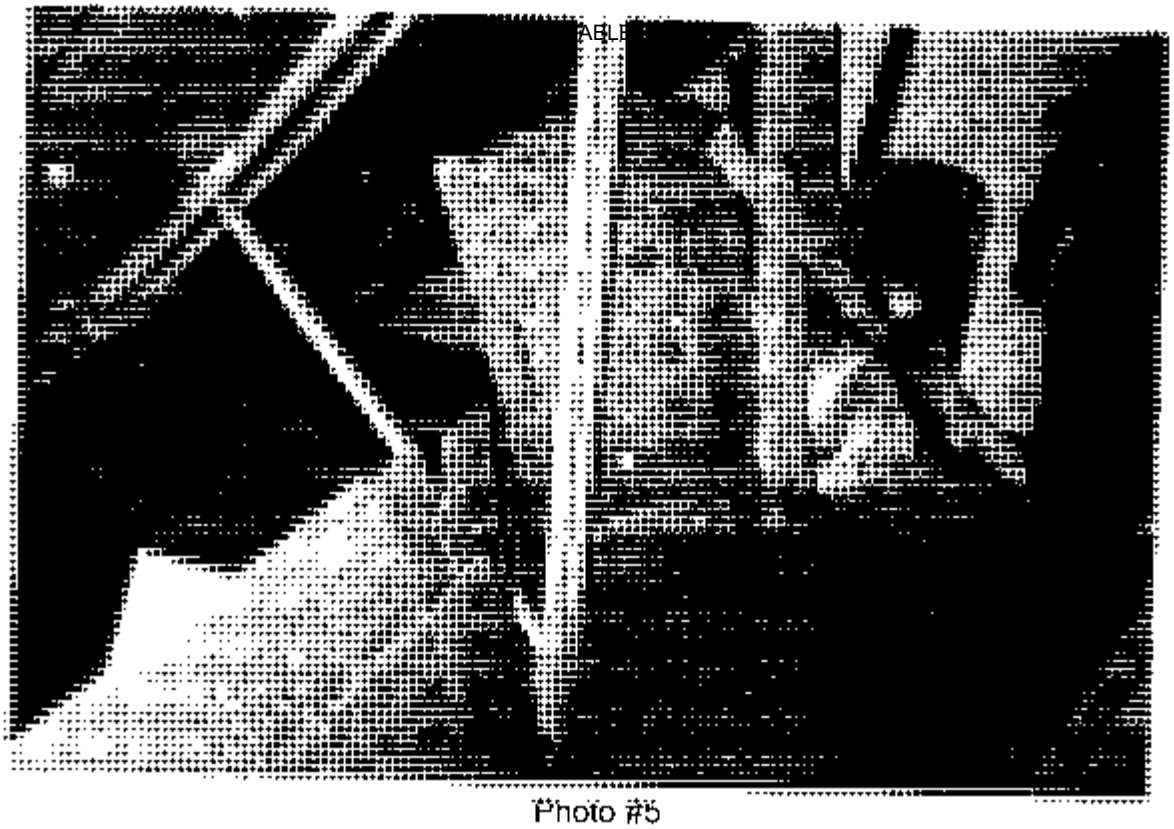


Photo #5

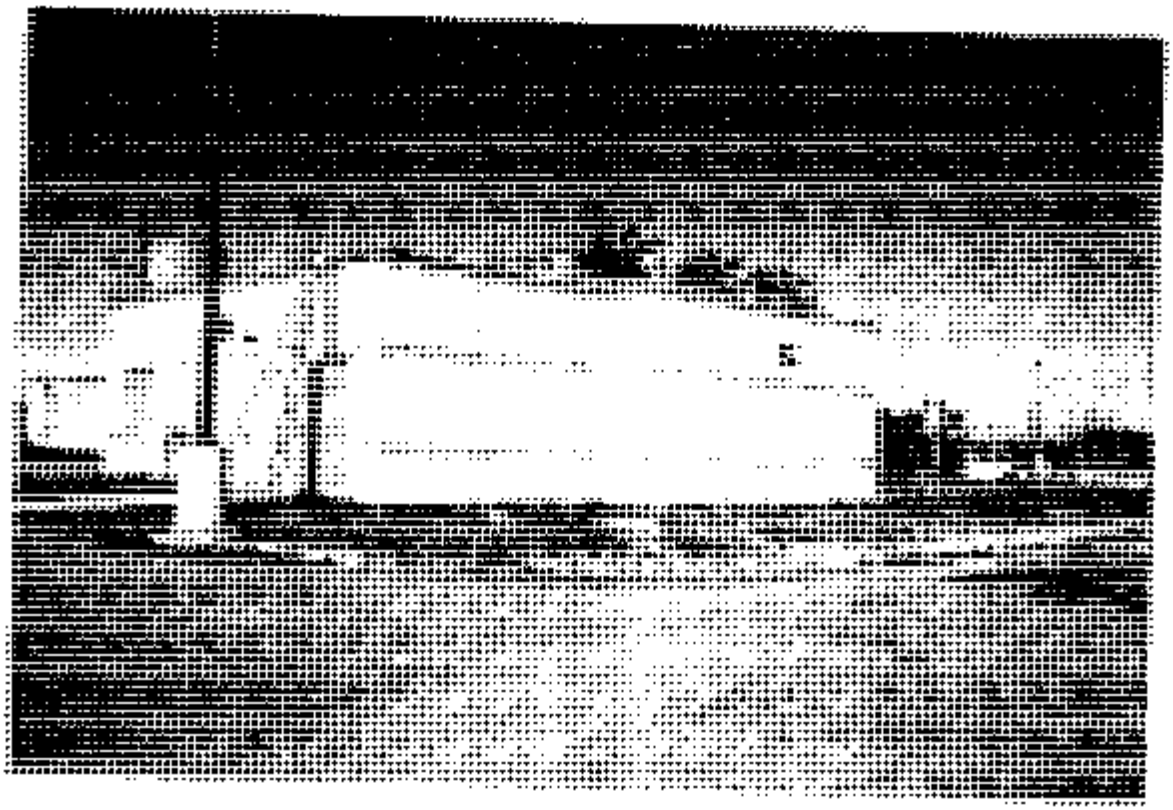


Photo #6

References

1. Department of Defense (DoD) Instruction 6055.1, Department of defense Occupational Safety and health (OSH) Program, 26 October 1984.

2. DoD Instruction 6055.5, Industrial Hygiene and Occupational Health, January 1989.

3. Army Regulation (AR) 40-5, Preventive Medicine, 15 October 1990.

4. National Guard Regulations (NGR) 385-15, Policy, Responsibilities, and procedures for Inspection/Evaluation and Use of ARNG Indoor Firing Ranges, 30 March 1990

5. Occupational Safety and health Administration (OSHA) Code of Federal Regulations (CFR) Title 29. Part 1910.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-ARS-IHNE 21 June 2007

MEMORANDUM THRU WVARNG, Medical Command, ATTN: LTC [redacted], Jr., 1740 Coonskin Drive, Charleston, WV 25311-1085

FOR WVARNG, Charleston Indoor Firing Range, ATTN: MAJ [redacted] 1740 Coonskin Drive, Charleston, WV 25311

SUBJECT: Annual Survey – Charleston Indoor Firing Range

1. I have enclosed the industrial hygiene survey report and the supporting documents completed by USACHPPM-N.

2. Please contact me at (410) 942-0273 if you have any questions regarding the enclosed report.

[redacted]
Regional Industrial Hygienist

2 Encls
1. Survey Report
2. CD

CF:
CO[redacted] (Encl 2)
CPT [redacted] (Encl 2)

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f) 30 June 2007

MEMORANDUM FOR West Virginia Army National Guard Occupational Health Manager (OHM), ATTN: LTC Non-Responsive 1740 Coonskin Drive, Charleston, WV 25311

SUBJECT: Charleston Indoor Firing Range (IFR) Evaluation, West Virginia Army National Guard (WVARNG).

1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Army National Guard Indoor Firing Ranges, 3 November 2006.

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

2. PURPOSE. The purpose of the survey was to evaluate the operating conditions of the Charleston indoor firing range for the West Virginia Army National Guard.

3. GENERAL.

a. Survey Personnel. This survey was conducted 20 March 2007 by Ms. Non-Responsive Regional Industrial Hygienist, from the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, Havre de Grace, Maryland and Ms. Non-Responsive Industrial Hygienist, from the United States Army Center for Health Promotion and Preventive Medicine North (USACHPPM-N), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix A of this report.

c. Background. LTC Non-Responsive requested an evaluation through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office of the operating condition of the Charleston indoor firing range serving the West Virginia Army National Guard.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a). NGR 385-15 and NG Pam 420-15 prescribe the policy and responsibilities for inspection, evaluation, operation, rehabilitation, and conversion of Army National Guard (ARNG) indoor firing ranges.

b. Calibration. A portable hot wire anemometer was used to measure ventilation rates. This instrument was calibrated utilizing National Institute of Standards and Testing (NIST)-traceable methods and manufacturer's instructions.

c. Methodology. The survey consisted of a visual inspection, collection of ventilation measurements, and observation of air movement patterns.

5. FINDINGS AND DISCUSSION.

a. Annual Safety Inspection. Records of an annual safety inspection of the active range were not available during this survey. An annual safety inspection using the checklist in NGR 385-15, Appendix F is required on an active range (reference 1b, 1-15 a, and 4-3 a). Once the range successfully passes the safety inspection, an IH Evaluation should then be requested from the NGB Region North IH Office (reference 1b, Figure 2-1).

b. Ventilation Requirements.

(1) Upon activation of the ventilation system, it was immediately observed that the range was under extreme negative pressure as it was almost impossible to open the exit door. An initial measurement indicated the range was under negative 1.53 inches water gauge (" w.g.) pressure. Negative pressure must not exceed

negative 0.20 " w.g. (reference 1b, 2-2 b(2)(g)). Extreme levels of negative pressure place additional loads onto the exhaust fans and decrease or may even prevent a safe emergency exit.

(2) Range exhaust ventilation should exceed supply ventilation by approximately 10% so that the range is under slight a slight negative pressure condition (reference 1b, 2-2 b(1)(f) and (h)). It was noted that the supply ventilation system was not initially operating. Maintenance personnel inspected the rooftop system and were able to activate it temporarily. Static pressure was then measured at negative .02 inches water gauge which was less than the desired minimum of negative .05 inches water gauge (reference 1b, 2-2 b(1)(g)).

(3) Purportedly, in an effort to increase air velocity past the firing line, metal panels were attached to the bottom third of the plenum wall. This action blocked airflow and resulted in air velocities below 50 feet per minute (fpm) at the lower levels of the firing line which made the range **UNSAFE** (reference 1b, 2-2 b (2)(a)). The panels were removed on the spot and the problem corrected.

(4) After the system operated for approximately 30 minutes, the supply ventilation system stopped working so the air velocity measurements at the individual firing positions could not be collected. Indoor firing ranges are required to have an operational mechanical ventilation system (reference 1b, 2-2 b(1)(a)). The ventilation system must be reliable to protect the health of personnel using and/or cleaning the range.

c. Target and Target Systems. Metal and plastic target holders were stored in the room just outside of the range affixed with used paper targets. Only paper targets and the installed target retrieval system are acceptable for use on the range to prevent ricochets (reference 1b, 2-2 e(1)(b)).

d. Range Lighting. Overhead lighting on the range protrudes below the ceiling. Range lighting must be protected by baffles to prevent breakage and ricochets (reference 1b, 2-2 a(1)(b) and c(2)(c)).

e. Range Use. A metal storage cabinet, tables, and chairs were maintained in the range area. Furniture must not be stored in the range, plenum area or behind the bullet trap (reference 1b, 2-3 d). Prior to moving contaminated furniture from the range, it must be decontaminated using the guidance in NG Pam 420-15, paragraph 3-2 (reference 1c, 3-3).

f. Prohibitions.

(1) Several boxes of ammunition were stored in a metal cabinet behind the firer's position. Ammunition may only be stored in approved and licensed facilities (reference 1b, 2-4 i).

(2) A dust pan containing empty shell casings and a hand broom were observed in the range. Dry sweeping is prohibited to prevent lead dust from becoming airborne and brooms of any kind shall not be stored on the range (reference 1b, 2-4 e).

g. Maintenance Requirements. The bullet trap was full and appeared to need lubrication. The bullet trap is required to be emptied every 480 hours of use or when the trap is three quarters full, whichever occurs first (reference 1b, 5-3 b). The lubrication of the bullet trap is required every three months along with a thorough inspection of the ventilation system including filters, louvers, and bullet trap (reference 1b, 5-3 a).

h. Other Observations. 55 gallon drums of bullet trap waste were stored in the foyer outside of the range. Indoor firing ranges must not be used for any other purpose than firing (reference 1b, 2-3 a). The foyer should not be used as a hazardous waste storage area.

6. RECOMMENDATIONS. For all personnel, this range is classified as **UNSAFE.**

a. Inspection Requirements.

(1) Annual Safety Inspection. Conduct a safety inspection of the range using the checklist in NGR 385-15 (reference 1b, 4-3 a). (No RAC Assigned)

(2) NGB Region North IH Inspection. Notify NGB Region North personnel after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first (reference 1b, 1-12 b, c, and d). (RAC 3)

b. Ventilation Requirements. Repair and/or service the indoor firing range ventilation system so that it always functions when in use and maintains a negative pressure of between negative 0.05" w.g. and negative 0.20" w.g. (reference 1b, 2-2 b(1)(a) and (g)). (RAC 3)

c. Target and Target Systems. Only use paper targets and the installed target retrieval system in the indoor firing range (reference 1b, 2-2 e(1)(b)). (RAC 3)

d. Range Use. Remove all items stored in the range, plenum area or behind the bullet trap (reference 1b, 2-3 d). Decontaminate items using the guidance in NG Pam 420-15, paragraph 3-2 (reference 1c, 3-3). (RAC 4)

e. Prohibitions.

(1) Remove ammunition from the indoor firing range (reference 1b, 2-4 i). (No RAC Assigned)

(2) Prohibit dry sweeping anywhere in the range and remove all brooms (reference 1b, 2-4 e). (RAC 3)

f. Maintenance Requirements.

(1) Empty the bullet trap every 480 hours of use or when the trap is three quarters full, whichever occurs first (reference 1b, 5-3 b). (RAC 4)

(2) Lubricate the bullet trap every three months and perform a thorough inspection of the ventilation system including filters, louvers, and bullet trap (reference 1b, 5-3 a). (RAC 3)

g. Other Observations. Remove all waste storage from the foyer area outside of the range and dispose of properly (reference 1b, 2-3 a). RAC 4

NGB-ARS-IHNE
SUBJECT: Charleston Indoor Firing Range Evaluation, West Virginia Army National Guard, 20 March 2007.

7. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 23.

Non-Responsive
Industrial Hygienist

APPROVED BY:

Non-Responsive
NGB Regional Industrial Hygienist

APPENDIX A
DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	***Exposure Conditions***			
	< AL	**Occasionally > AL Always < OEL**	**> AL < = OEL**	**> OEL**
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	***Points***
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

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

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

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

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

b. Number of Exposed Personnel Points Assessed

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

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*IPC*
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	*ILLNESS PROBABILITY CODE*			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f) 25 March 2008

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
CHARLESTON, WV
30 NOVEMBER 2007

1. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards at the Charleston IFR.

2. CONCLUSIONS. Occupational health risks at the IFR were well controlled with the exception of the items listed below.

3. FINDINGS AND RECOMMENDATIONS. For all personnel, this range is classified as **UNSAFE**.

a. Inspection Requirements.

(1) Annual Safety Inspection. The annual safety inspection of the range was available and accurate, continue using the checklist in National Guard Regulation (NGR) 385-15 annually. (No RAC Assigned)

(2) NGB Region North IH Inspection. NGB Region North personnel must be notified after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first. (RAC 4)

b. Ventilation Requirements.

(1) Ventilation Shutoff/ Pressure Differential. An initial measurement of the ventilation in the range indicated the range was under negative -0.55 inches water gauge (" w.g.) pressure, which is excessive and indicates the supply air was not working correctly. Repair and/or service the indoor firing range ventilation system so that it always functions when in use and maintains a negative pressure of between negative 0.05" w.g. and negative 0.20" w.g.. (RAC 3)

(2) Plenum Blockage. While collecting air velocity measurements, it was noted that lane 5 of the range had significantly lower values than the other four lanes. Remove the control box from plenum in front of lane 5 to ensure continuous air flow above 50 fpm at all points along the range. (RAC 3)

c. Range Lighting. Overhead lighting on the range protrudes below the ceiling (see Figure C-5, Appendix c). Install baffles on top of range lighting to prevent breakage and ricochets. (RAC 4)

d. Bullet Traps. The bullet trap was moderately pitted, and the weld seams along the edges of the plates were not ground smooth (see Figure C-6, Appendix C). Replace the bullet trap plates and ensure the weld seams along the edges of the plates are ground smooth so there are no uneven surfaces that could result in ricochet. (RAC 4)

e. Lead Levels. Four air samples were collected while live fire occurred and one sample was above the required level of 0.05 milligrams per cubic meter (mg/m^3). Reduce lead levels below 0.05 mg/m^3 by increasing ventilation and removing obstructions to airflow. (RAC 3)

f. Prohibitions. During the course of the inspection a dry broom was found on the range. Prohibit dry sweeping to prevent lead dust from becoming airborne and ensure brooms are discarded as hazardous waste. (RAC 5)

INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRIG RANGE (IFR)
CHARLESTON, WV
30 NOVEMBER 2007

1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Army National Guard Indoor Firing Ranges, 3 November 2006.

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

2. PURPOSE. The purpose of the survey was to evaluate the operating conditions of the Charleston indoor firing range for the West Virginia Army National Guard.

3. GENERAL.

a. Survey Personnel. This survey was conducted 30 November 2007 by Mr. Non-Responsive, Industrial Hygienist, and 1LT Non-Responsive, Environmental Engineer, both from the United States Army Center for Health Promotion and Preventive Medicine-North (USACHPPM–North), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1 (reference 1a). This table is provided in Appendix A of this report.

c. Background. LTC Non-Responsive requested an evaluation through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office of the operating condition of the Charleston indoor firing range serving the West Virginia Army National Guard.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards

applicable (reference 1a). NGR 385-15 and NG Pam 420-15 prescribe the policy and responsibilities for inspection, evaluation, operation, rehabilitation, and conversion of Army National Guard (ARNG) indoor firing ranges.

b. Calibration. All instruments were calibrated utilizing National Institute of Standards and Technology (NIST) traceable methods and manufacturers' instructions.

c. Methodology. The survey consisted of a visual inspection, collection of ventilation measurements, and observation of air movement patterns.

5. FINDINGS AND DISCUSSION.

a. Annual Safety Inspection. Records of an annual safety inspection of the active range were available during this survey. An annual safety inspection using the checklist in NGR 385-15, Appendix F is required on an active range (reference 1b, paragraph 1-15 a, and paragraph 4-3 a). Once the range successfully passes the safety inspection, an IH Evaluation should then be requested from the NGB Region North IH Office (reference 1b, Figure 2-1).

b. Ventilation Requirements.

(1) Upon activation of the ventilation system, it was immediately observed that the range was under excessive negative pressure as it was very difficult to open the exit door. An initial measurement indicated the range was under negative -0.55 inches water gauge (" w.g.) pressure. Negative pressure must not exceed negative 0.20 " w.g. (reference 1b, paragraph 2-2 b(2)(g)). Extreme levels of negative pressure place additional loads onto the exhaust fans and decrease or may even prevent a safe emergency exit.

(2) Purportedly, in an effort to increase air velocity past the firing line, metal and insulation panels were attached to the upper two-thirds of the plenum wall (see Figures C-1 thru C-2, Appendix C). This action blocked airflow and resulted in average air velocities below 50 feet per minute (fpm) at the upper levels of the firing line which made the range **UNSA**FE (reference 1b, paragraph 2-2 b (2)(b)). The panels were removed on the spot and the problem corrected.

(3) After the system operated for approximately 30 minutes, the ventilation system stopped working so the air velocity measurements at the individual firing positions could not be collected. Ventilation failure could be a sign of an unbalanced system. Supply air should be approximately 10% less than exhaust air. Indoor firing ranges are required to have an operational mechanical ventilation

system (reference 1b, paragraph 2-2 b(1)(a)). The ventilation system must be reliable to protect the health of personnel using and/or cleaning the range.

(4) While collecting air velocity measurements, in was noted that lane 5 of the range had significantly lower values than the other four lanes. This was attributed to the control box located on the Plenum wall (see figures C-3 and C-4, Appendix C). In accordance with NGR 385-15 (reference 1b, paragraph 2-4 c) this control system must be moved outside the range so as not to impede the airflow at any point on the range.

c. Range Lighting. Overhead lighting on the range protrudes below the ceiling (see Figure C-5, Appendix c). Range lighting must be protected by baffles to prevent breakage and ricochets (reference 1b, paragraph 2-2 a(1)(b) and c(2)(c)).

d. Bullet Traps. The bullet trap was moderately pitted, and the weld seams along the edges of the plates were not ground smooth (see Figure C-6, Appendix C) (reference 1b, paragraph 2-2 d(2)(b)). There should be no uneven surfaces that could result in ricochet.

e. Lead Levels. According to NGR 385-15 a range is considered SAFE when all air samples are below 0.05 milligrams per cubic meter (mg/m^3). Four air samples were taken while live fire occurred. Sample results are presented in Table B-1, Appendix B. Sample results were above 0.05 mg/m^3 but below 1.0 mg/m^3; however, since firing was unable to be done at every point of the firing line the range shall be classified as UNSAFE (reference 1b, paragraph 2-2 f(2)(b)).

f. Prohibitions. A hand broom was observed in the entrance/storage area to the range. Dry sweeping is prohibited to prevent lead dust from becoming airborne and brooms of any kind shall not be stored on the range (reference 1b, paragraph 2-4 e).

6. RECOMMENDATIONS. For all personnel, this range is classified as **UNSAFE**.

a. Inspection Requirements.

(1) Annual Safety Inspection. Continue annual safety inspection of the range using the checklist in NGR 385-15 (reference 1b, paragraph 4-3 a). (No RAC Assigned).

(2) NGB Region North IH Inspection. Notify NGB Region North personnel after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first (reference 1b, paragraph 1-12 b, c, and d). (RAC 4)

b. Ventilation Requirements.

(1) Ventilation Shutoff/ Pressure Differential. Repair and/or service the indoor firing range ventilation system so that it always functions when in use and maintains a negative pressure of between negative 0.05" w.g. and negative 0.20" w.g. (reference 1b, paragraph 2-2 b(1)(a) and (g)). (RAC 3)

(2) Plenum Blockage. Remove control box from plenum in front of lane 5 to ensure continues air flow above 50 fpm at all points along the firing line (reference 1b, paragraph 2-2 b(1)(b) and 1b, 2-4 c). (RAC 3)

c. Range Lighting. Install baffles on top of range lighting to prevent breakage and ricochets (reference 1b, paragraph 2-2 a(1)(b) and c(2)(c)). (RAC 4)

d. Bullet Traps. Replace the bullet trap plates and ensure the weld seams along the edges of the plates are ground smooth so there are no uneven surfaces that could result in ricochet (reference 1b, paragraph 2-2 d(2)(b)). (RAC 4)

e. Lead Levels. Reduce lead levels below 0.05 milligrams per cubic meter (mg/m^3) by increasing ventilation and removing obstructions to airflow (references 1b, paragraph 2-2 b(1)(b) and 1b, paragraph 2-4 c). (RAC 3)

f. Prohibitions. Prohibit dry sweeping to prevent lead dust from becoming airborne and ensure brooms are discarded as hazardous waste (reference 1b, paragraph 2-4 e). (RAC 5)

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range (IFR), Charleston, VA, 30 November 2007

7. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 3.

Non-Responsive

Non-Responsive

1LT, MS
Environmental Engineer

APPROVED BY:

Non-Responsive

NGB Regional Industrial Hygienist

APPENDIX A
DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	***Exposure Conditions***			
	< AL	**Occasionally > AL Always < OEL**	**> AL < = OEL**	**> OEL**
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	***Points***
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

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

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

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

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

b. Number of Exposed Personnel Points Assessed

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

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*IPC*
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	*ILLNESS PROBABILITY CODE*			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range (IFR), Charleston, VA, 30 November 2007

APPENDIX B
AIR SAMPLING RESULTS

Table B-1. Results of Air Sampling for Charleston Indoor Firing Range, 30 November 2007

Sample ID Numbers	Sample Type	Pump ID	Final Result (mg/m^3)	Standard	Meets Standard
R1	Breathing Zone	647976	0.080	0.05	No
R2	General Area	672027	<0.017	0.05	Yes
R3	General Area	648349	<0.016	0.05	Yes
R4	General Area	647600	<0.003	0.05	Yes

APPENDIX C
PHOTOGRAPHS

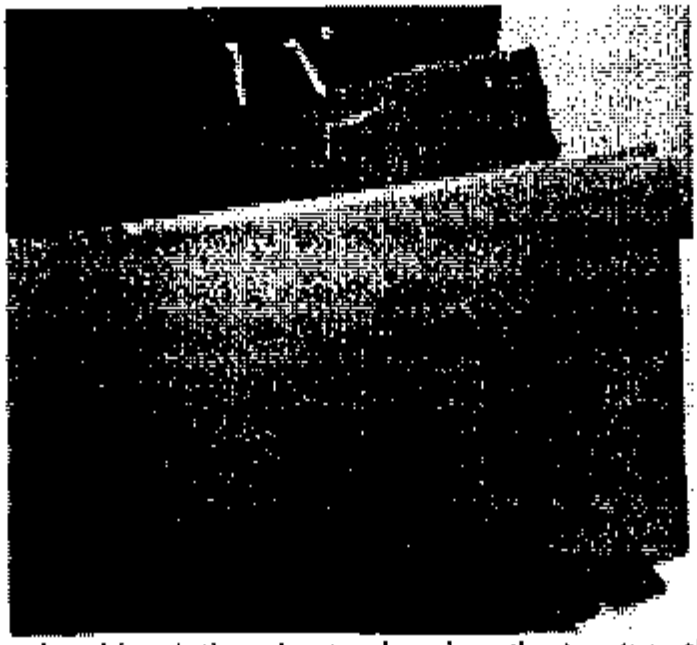


Figure C-1. Metal and insulating sheets placed on the top two-thirds of the IFR plenum.

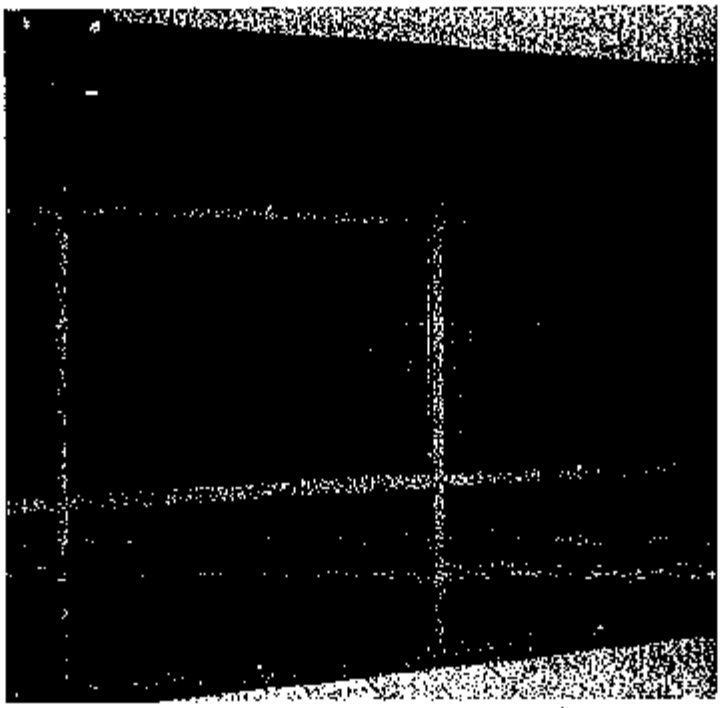


Figure C-2. Plenum Wall of the IFR.

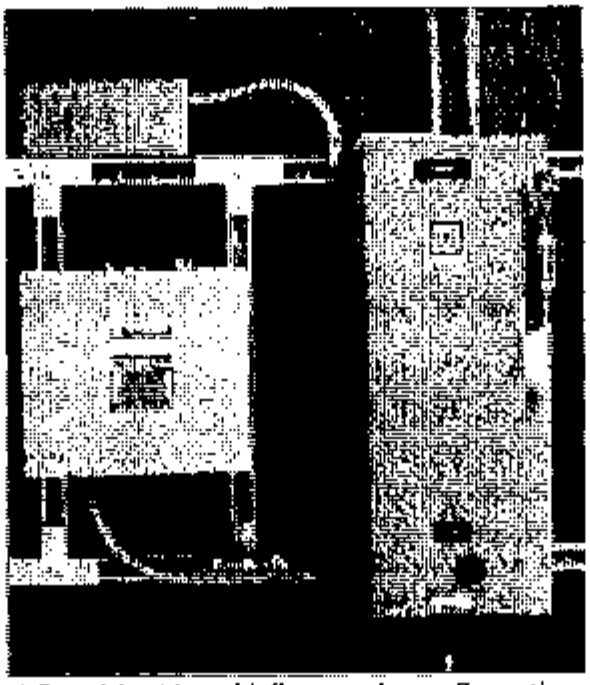


Figure C-3. Control Box blocking Airflow to Lane 5 on the range (close view).

Figure C-4. Control Box blocking Airflow to Lane 5 on the range (insulating panels removed).

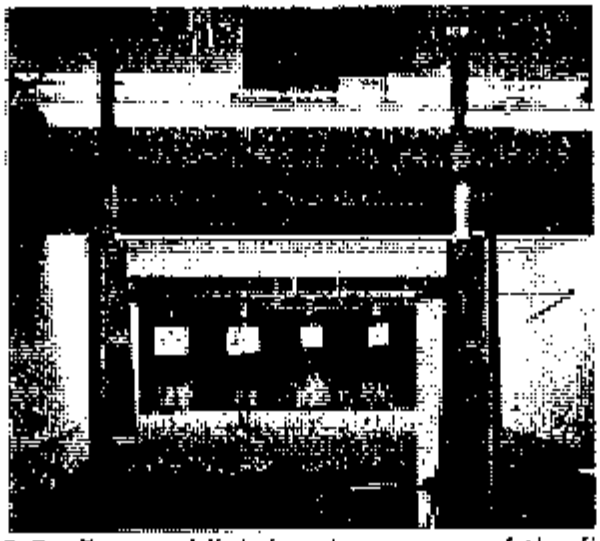


Figure C-5. Exposed lighting downrange of the firing line.

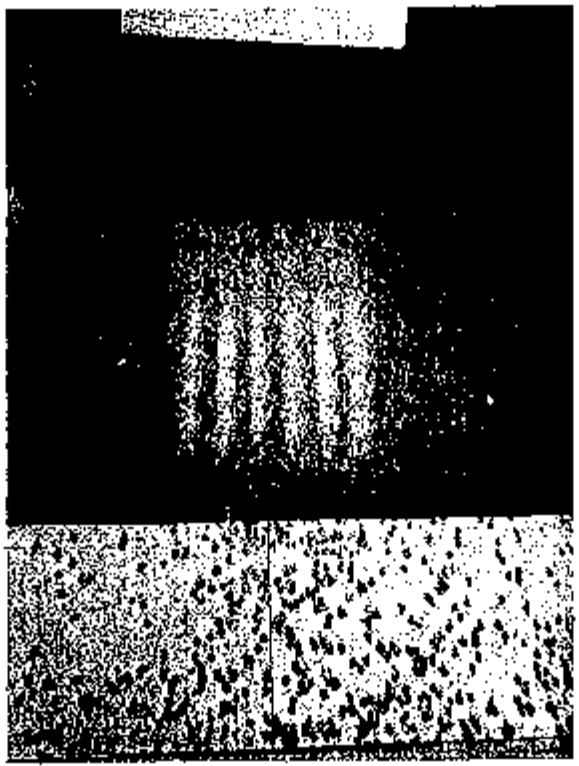


Figure C-6. Moderate to severe pitting of the bullet trap baffles and non-flush weld seams along plates.

Figure C-7. Setup of Range Lanes

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f) 4 November 2009

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
CHARLESTON, WV
15 APRIL 2009

1. PURPOSE. The purpose of the survey was to evaluate the operating conditions of the Charleston indoor firing range for the West Virginia Army National Guard (WVARNG).

2. CONCLUSIONS. Occupational health risks at the IFR were well controlled with the exception of the items listed below.

3. FINDINGS AND RECOMMENDATIONS. For all personnel, this range is classified as **SAFE.** According to regulation, all Guardsmen and non-military personnel may use the range up to 8 hours per day; and those under 17 years of age may use the range up to 4 hours per day.

a. Inspection Requirements.

(1) Annual Safety Inspection. The annual safety inspection of the range was conducted as required by WVARNG safety personnel; continue using the checklist in the National Guard Regulation (NGR) 385-15 annually. **(REPEAT FINDING AND RECOMMENDATION - No RAC Assigned)**

(2) NGB Region North IH Inspection. NGB Region North personnel must be notified after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first. **(REPEAT FINDING AND RECOMMENDATION - RAC 4)**

b. Ventilation Requirements. While collecting air velocity measurements, it was noted that lane 5 of the range had significantly lower values than the other four lanes. Remove the control box from the plenum in front of lane 5 to ensure

continuous air flow above 50 fpm at all points along the range. **(REPEAT FINDING AND RECOMMENDATION - RAC 3)**

c. Bullet Traps. The bullet trap was moderately pitted, and the weld seams along the edges of the plates were not ground smooth. Replace the bullet trap plates and ensure the weld seams along the edges of the plates are ground smooth so there are no uneven surfaces that could result in ricochet. **(REPEAT FINDING AND RECOMMENDATION - RAC 4)**

d. Lead Levels. Five breathing zone and three general area air samples were collected while live fire occurred and none of the samples were above the required level of 0.05 milligrams per cubic meter (mg/m^3). **(RAC 4)**

INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRIG RANGE (IFR)
CHARLESTON, WV
15 APRIL 2009

1. REFERENCES.

a. Department of Defense Instruction (DoDI) 6055.1, Department of Defense (DoD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Army National Guard Indoor Firing Ranges, 3 November 2006.

2. PURPOSE. The purpose of the survey was to evaluate the operating conditions of the Charleston indoor firing range for the West Virginia Army National Guard (WVARNG).

3. GENERAL.

a. Survey Personnel. This survey was conducted 15 April 2009 by Non-Responsive Regional Industrial Hygienist and Non-Responsive Industrial Hygienist from the National Guard Bureau Region North Industrial Hygiene office, Havre De Grace, Maryland; and Non-Responsive Certified Industrial Hygienist and Non-Responsive Industrial Hygienist, both from the United States Army Center for Health Promotion and Preventive Medicine-North (USACHPPM–North), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1 (reference 1a). This table is provided in Appendix A of this report.

c. Background. LTC Non-Responsive requested an evaluation through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office of the operating condition of the Charleston indoor firing range serving the West Virginia Army National Guard. The IFR was previously evaluated in November of 2007 where it was found to be 'UNSAFE'.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a). NGR 385-15 and NG Pam 420-15 prescribe the policy and responsibilities for inspection, evaluation, operation, rehabilitation, and conversion of Army National Guard (ARNG) indoor firing ranges (references 1b and 1c).

b. Calibration. All instruments were calibrated utilizing National Institute of Standards and Technology (NIST) traceable methods and manufacturers' instructions.

c. Methodology. The survey consisted of a visual inspection, collection of ventilation measurements, air sampling, and observation of air movement patterns.

5. FINDINGS AND DISCUSSION. NGB Regional Industrial Hygienists make the final classification recommendation to the State Safety and Occupational Health Manager (SOHM) on whether the range is **SAFE**, **LIMITED USE**, or **UNSAFE** based on ventilation measurements and air sampling as per NGB 385-15, Paragraph 1-12d (reference 1b). Based on results of this survey, for all personnel, this range is classified as **SAFE**. According to NGR 385-15, Table 1-1, all Guardsmen and non-military personnel may use the range up to 8 hours per day; and those under 17 years of age may use the range up to 4 hours per day (reference 1b).

a. Annual Safety Inspection. Records of an annual safety inspection of the active range were available during this survey. An annual safety inspection using the checklist in NGR 385-15, Appendix F is required on an active range (reference 1b, paragraph 1-15 a, and paragraph 4-3 a). Once the range successfully passes the safety inspection, an IH Evaluation should then be requested from the NGB Region North IH Office (reference 1b, Figure 2-1).

b. Ventilation Requirements.

(1) Negative Pressure. Because of equipment malfunction, a measurement of negative pressure could not be collected. However, survey personnel, from outside of the range, observed the movement of smoke under the door into the range indicating that it was in fact under slight negative pressure in relation to the outer room. This was considered to meet the requirements of NGB 385-15, paragraph 2-2 b(2)(g) (reference 1b).

(2) Average Airflow at the Firing Line. NGR 385-15, paragraph 2-2 b(1)(b) requires the average velocity of air to be at least 50 feet per minute (fpm) at each firing lane (reference 1b). The average velocity of air in Lanes 1 through 5 was 150, 169, 95, 82, and 49 fpm respectively. Because velocity readings can vary by as much as ± 10%, the average velocities measured were considered acceptable.

(3) Control Box on Plenum Wall. As was noted during the November 2007 survey, the air flow in Lane 5 was significantly lower than the other four lanes. This was attributed to the control box located on the plenum wall (see Appendix C, Photographs C-1 and C-2). NGR 385-15, paragraph 2-4 c, requires the plenum wall to remain clear to prevent the obstruction of the airflow (reference 1b). The control system must be moved outside the range so as not to impede the airflow at any point on the range (REPEAT FINDING).

c. Bullet Traps. The bullet trap was moderately pitted, and the weld seams along the edges of the plates were not ground smooth (see See Appendix C, Photograph C-3). NGR 385-15, paragraph 2-2 d(2)(b) directs that there should be no uneven surfaces that could result in ricochet (reference 1b).

d. Lead Levels. According to NGR 385-15, paragraph 2-2 f(1)(a) a range is considered SAFE when all breathing zone air samples are below 0.05 milligrams per cubic meter (mg/m^3). Five breathing zone and three general area air samples were collected during live fire over a 97 minute time period. None of the sample results was greater than 0.05 mg/m^3 and results are presented in Appendix B, Table B-1.

6. RECOMMENDATIONS. Based on results of this survey, for all personnel, this range is classified as **SAFE.** According to NGR 385-15, Table 1-1, all Guardsmen and non-military personnel may use the range up to 8 hours per day; and those under 17 years of age may use the range up to 4 hours per day (reference 1b). **(RAC 4)**

a. Inspection Requirements.

(1) Annual Safety Inspection. Continue the annual safety inspection of the range using the checklist in NGR 385-15, paragraph 4-3 a (reference 1b). **(REPEAT RECOMMENDATION - No RAC Assigned)**

(2) NGB Region North IH Inspection. Notify NGB Region North personnel after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first as required by NGR 385-15, paragraphs 1-12 b, c, and d (reference 1b). **(REPEAT RECOMMENDATION - RAC 4)**

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range (IFR), Charleston, West Virginia, 15 April 2009

b. Ventilation Requirements. Remove the control box from plenum in front of lane 5 to ensure continues air flow above 50 fpm at all points along the firing line as required by NGR 385-15, paragraphs 2-2 b(1)(b) and 1b, 2-4 c (reference 1b). **(REPEAT RECOMMENDATION - RAC 3)**

c. Bullet Traps. Replace the bullet trap plates and ensure the weld seams along the edges of the plates are ground smooth so there are no uneven surfaces that could result in ricochet as required by NGR 385-15, paragraph 2-2 d(2)(b) (reference 1b). **(REPEAT RECOMMENDATION - RAC 4)**

7. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 23.

Non-Responsive
Industrial Hygienist

APPROVED BY:

Non-Responsive
NGB Regional Industrial Hygienist

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range (IFR), Charleston, West Virginia, 15 April 2009

APPENDIX A
DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	***Exposure Conditions***			
	< AL	**Occasionally > AL Always < OEL**	**> AL < = OEL**	**> OEL**
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	***Points***
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range (IFR), Charleston, West Virginia, 15 April 2009

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

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

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

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

b. Number of Exposed Personnel Points Assessed

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

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*IPC*
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	*ILLNESS PROBABILITY CODE*			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

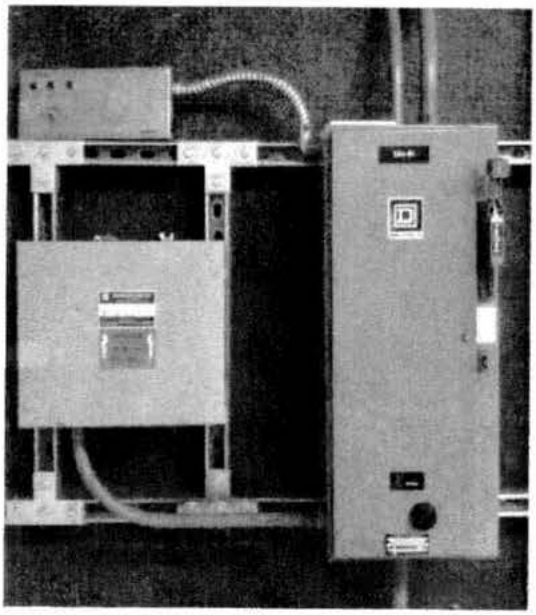
NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range (IFR), Charleston, West Virginia, 15 April 2009

APPENDIX B
AIR SAMPLING RESULTS

Table B-1. Results of Air Sampling for Charleston Indoor Firing Range.

Sample ID Numbers	Sample Type	Location	Final Result (mg/m^3)	Standard (mg/m^3)	Met Standard
WVR1	Breathing Zone	Lane 1	<0.012	0.05	Yes
WVR2	Breathing Zone	Lane 2	<0.012	0.05	Yes
WVR3	Breathing Zone	Lane 3	<0.012	0.05	Yes
WVR4	Breathing Zone	Lane 4	<0.013	0.05	Yes
WVR5	Breathing Zone	Lane 5	<0.012	0.05	Yes
WVR6	General Area	Plenum, Between Lanes 1 and 2	<0.012	0.05	Yes
WVR7	General Area	Plenum, Between Lanes 3 and 4	<0.012	0.05	Yes
WVR8	General Area	Outer Room	<0.012	0.05	Yes
WVR9	Blank	N/A	<0.003	N/A	N/A

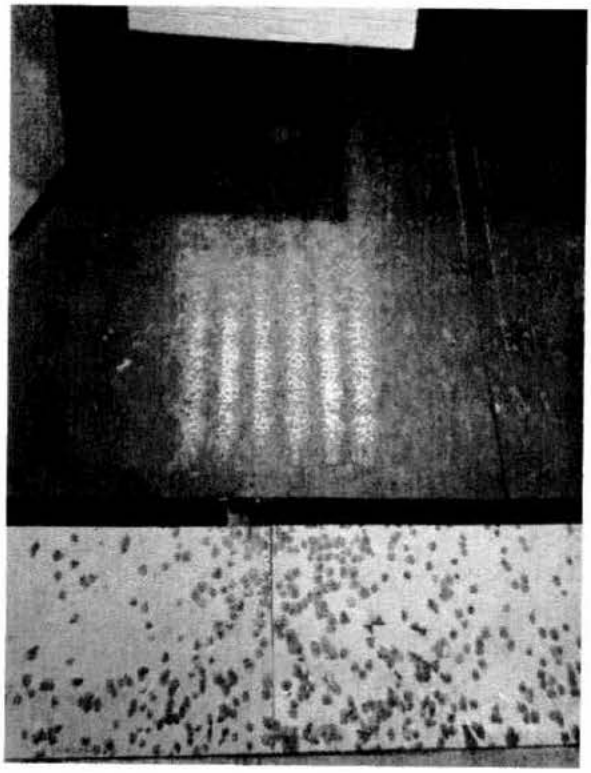
APPENDIX C
PHOTOGRAPHS



Photograph C-1. Control Box Installed on Plenum Wall.

Photograph C-2. Control Box on Plenum Wall Reduces Airflow in Lane 5.

APPENDIX C
PHOTOGRAPHS
(CONTINUED)



Photograph C-3. Moderate to Severe Pitting of the Bullet Trap Baffles and Non-Flush Weld Seams Along Plates.

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

June 18, 2013

E-MAIL
Ms. Non-Responsive
Army National Guard
ATTN: ARNG-CSG-P
301-IH Old Bay Lane
Havre de Grace, MD 21078

Subject: Industrial Hygiene Assessment Report
Indoor Firing Range (IFR), 1740 Coonskin Drive, Charleston, WV

Dear Non-Respons

Compliance Management International (CMI) is pleased to enclose the final report of the Industrial Hygiene assessment conducted at the Army National Guard IFR facility located at 1740 Coonskin Drive, Charleston, West Virginia.

Thank you for the opportunity to perform this assessment. Please contact me if you should have any questions or require any additional information.

Sincerely,

Non-Responsive

Senior Industrial Hygienist

NATIONAL GUARD BUREAU
REGION NORTH INDUSTRIAL HYGIENE OFFICE
HAVRE DE GRACE, MARYLAND

INDUSTRIAL HYGIENE ASSESSMENT
IFR, 1740 COONSKIN DRIVE
CHARLESTON, WEST VIRGINIA 25311
SURVEY DATE: APRIL 30, 2013

REPORT DATE: June 18, 2013

TABLE OF CONTENTS

APPENDICES

1.0 EXECUTIVE SUMMARY

1.1 Introduction

Assessment Date: April 30, 2013

Purpose: The National Guard Bureau (NGB) retained Compliance Management International (CMI) to assist it in performing an Industrial Hygiene assessment at the Army National Guard (ARNG) Indoor Firing Range (IFR) at 1740 Coonskin Drive, Charleston, West Virginia. The purpose of the Industrial Hygiene survey was to identify and measure the existence and extent of potentially hazardous operations or conditions at ARNG facilities. The assessment was performed by Mr. Non-Resp Non-Resp CIH, Senior Industrial Hygienist, of CMI. The assessment included: evaluations of operations, including engineering controls, work practices, administrative policies, and/or personal protective equipment controls; illumination measurements; and observations and conditions of the facility;.

1.2 Facility Description

The IFR, located at 1740 Coonskin Drive, Charleston, West Virginia, is constructed of block masonry interior and exterior brick walls on a concrete slab. The IFR has a total of 5 shooting lanes. Photographs of the facility are presented in Appendix A of this report.

1.3 Findings and Conclusions

The main findings and conclusions of the assessment are:

- There were 5 Guardsmen shooting on the day of the assessment. 4 of the 5 Guardsmen were part of the West Virginia Air National Guard marksmanship team. The fifth individual was a member of the West Virginia Army National Guard.

- Four personal air samples were collected from individuals firing pistols during the survey. On the day of the assessment, the shooters had lead exposures that ranged from 17-55 micrograms per cubic meter ($\mu g/m^3$) while firing.

- The average illuminance behind the bullet traps and at the firing line were below the recommended values. One target area illumance level also was below the recommended value due to a burned out light. The illuminance levels in all other areas of the facility met or exceeded the recommended reference guidelines.

- Average air velocity rates at the firing line were 120, 93, 95, 102, and 48. Velocity readings can vary by as much ±10%. Therefore, the airflow rates at the firing line were considered acceptable based on the Army Standard.

- The supply and exhaust fans were not interlocked.

- The fan control box was mounted on the supply plenum wall, which may interfere with air flow at the firing line.

- A table was placed in front of the supply plenum, which may interfere with air flow at the firing line.

- There was no illuminated warning sign located outside of the range to alert individuals that the range is in use.

- The bullet traps were not numbered with corresponding firing line.

1.4 Recommendations

CMI's recommendations resulting from this assessment, including the determination of the Risk Assessment Code (RAC) are included in a separate document entitled, "IFR_13_Recommendations."

2.0 OPERATION DESCRIPTION

2.1 Indoor Firing Range

INSTALLATION: IFR
BUILDING: Charleston, WV
LOCATION: Firing Lines
OPERATION: Pistol Shooting

OPERATION DESCRIPTION: On the day of the assessment, CMI observed normal operations for IFR. There were 5 shooters on the day of the survey from the West Virginia Air National Guard and West Virginia National Guard. The weapons fired during the survey were 9 millimeter (mm) and .45 caliber pistols. The ammunition used during the survey was 9 mm, 115 grain, full metal jacket (FMJ) and .45 caliber, FC10 Match, 230 grain, FMJ.

CHEMICAL AND PHYSICAL AGENTS SAMPLED: Lead air samples were collected from four of the shooters and an area behind the firing line. Refer to Section 3.3 for the lead results.

VENTILATION SYSTEM EVALUATION: On the day of the assessment, CMI performed measurements the IFR ventilation system. Velocity measurements were made at each of the five lanes. Refer to Section 3.3 for ventilation survey results.

LIGHTING: The average illuminance levels were measured at the firing lines, behind the firing line, at the targets, and behind the bullet trap. Refer to Section 3.1 of this report for a summary of the lighting measurements.

PERSONAL PROTECTIVE EQUIPMENT: The shooters standard issue uniforms, safety glasses and hearing protection on the day of the assessment. Overall, the PPE worn on the day of the assessment was sufficiently protective for the tasks performed.

INTERPRETATION OF RESULTS: On the day of the assessment, the shooters had lead exposures that ranged from 17-55 micrograms per cubic meter ($\mu g/m^3$) while firing. Therefore, it is recommended that Guardsmen that are exposed less than 30 days per year be limited to 6 hours of exposure per day and Guardsmen on marksmanship teams or exposed more than 30 days per year be limited to 4 hours of exposure per day.

The average illuminance levels behind the bullet trap and at the firing line were below the recommended values.

3.0 SAMPLE RESULTS AND MEASUREMENTS

3.1 Illuminance Survey

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400 Precision Light Meter (Serial No. 98011EL). The light meter was last calibrated in November 13, 2012. Measurements collected were compared to National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Amy National Guard Indoor Firing Ranges, 3 November 2006.

TABLE 1
ILLUMINANCE MEASUREMENTS

Sample ID	Sample Description	Average Illuminance Measurements (fc)	Minimum Illuminance Value Required (fc)
A	Behind Bullet Trap	**7.0**	20
B	Behind Line 1	52.8	50
C	Behind Line 2	77.0	50
D	Behind Line 3	83.4	50
E	Behind Line 4	75.0	50
F	Behind Line 5	53.5	50
G	Firing Line Lane 1	**27.2**	60
H	Firing Line Lane 2	**47.3**	60
I	Firing Line Lane 3	**53.0**	60
J	Firing Line Lane 4	**46.3**	60
K	Firing Line Lane 5	**26.8**	60
L	Target Lane 1	103.2	100
M	Target Lane 2 (1 light burned out)	**93.5**	100
N	Target Lane 3	172.1	100
O	Target Lane 4	100.1	100
P	Target Lane 5	129.7	100

Table Notes:
1. fc = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Amy National Guard Indoor Firing Ranges, 3 November 2006.

3.2 Ventilation Survey

On the day of the assessment, CMI made measurements of exhaust ventilation systems throughout the IFR. This report's findings are based on the ventilation rates collected during the survey, which are summarized in Table 2 below.

TABLE 2
VENTILATION MEASUREMENTS

Location	Average Value (fpm)	Reference Value
Lane 1	120	50 fpm
Lane 2	93	
Lane 3	95	
Lane 4	102	
Lane 5	48	

Table Notes:
1. fpm = feet per minute

Source: National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Amy National Guard Indoor Firing Ranges, 3 November 2006.

3.3 Lead Exposure Sampling

CMI performed air sampling on four of the five shooters as part of the assessment to measure lead exposures while firing weapons. One general area sample was also collected from behind the firing line. The air samples collected as a part of this assessment were shipped to AMA Analytical Services, Inc. in Lanham, Maryland, for analysis and were analyzed using the NIOSH 7420 flame atomic absorption spectrophotometer (FAAS) method. All wipe sample results were reported in micrograms of lead per square foot of surface sampled ($\mu g/ft^2$) for the purposes of this assessment. Bulk samples are presented in percent (%) lead.

This report's findings are based on the lead samples collected during the assessment, which are summarized in Table 3. Refer to Appendix C for the complete laboratory wipe sample analysis results.

TABLE 3
LEAD SAMPLE RESULTS SUMMARY

Sample ID	Location	Duration (min)	Lead Result ($\mu g/m^3$)	Standard ($\mu g/m^3$)
1	Non-Responsive – Breathing Zone Sample – Lane 4 – Firing .45 Caliber Pistol	80	**55**	50
2	Non- –Breathing Zone Sample – Lane 3 – Firing mm Pistol	80	18	50
3	Non- – Breathing Zone Sample – Lane 1 – Firing 45 Caliber Pistol	80	17	50
4	Non- – Breathing Zone Sample – Lane 2 – Firing .45 Caliber Pistol	82	27	50
5	**Behind Firing Line** – General Area Sample	80	<12	50

Table Notes:
1. **Bolded** results exceed listed criteria
2. **ug/ft^2 =** micrograms per square foot

Source: National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Amy National Guard Indoor Firing Ranges, 3 November 2006.

4.0 ONSITE OBSERVATIONS

A copy of CMI's field notes from this assessment is included in a separate document entitled, "IFR_13_Field Notes."

Appendix F of National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Amy National Guard Indoor Firing Ranges, 3 November 2006 was used as a checklist to evaluate the facility. The deficiencies identified below were noted at the facility:

- A hand-held ABC-type fire extinguisher was mounted outside the firing range door not in the range;
- The supply and exhaust fans were not interlocked;
- The fan control box was also mounted on the supply plenum wall;
- A table was placed in front of the supply plenum
- There was no illuminated warning sign located outside of the range to alert individuals that the range is in use;
- The bullet traps were not numbered with corresponding firing line.

6.0 REFERENCES

1. National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Amy National Guard Indoor Firing Ranges, 3 November 2006.

APPENDIX A

FACILITY PHOTOGRAPHS

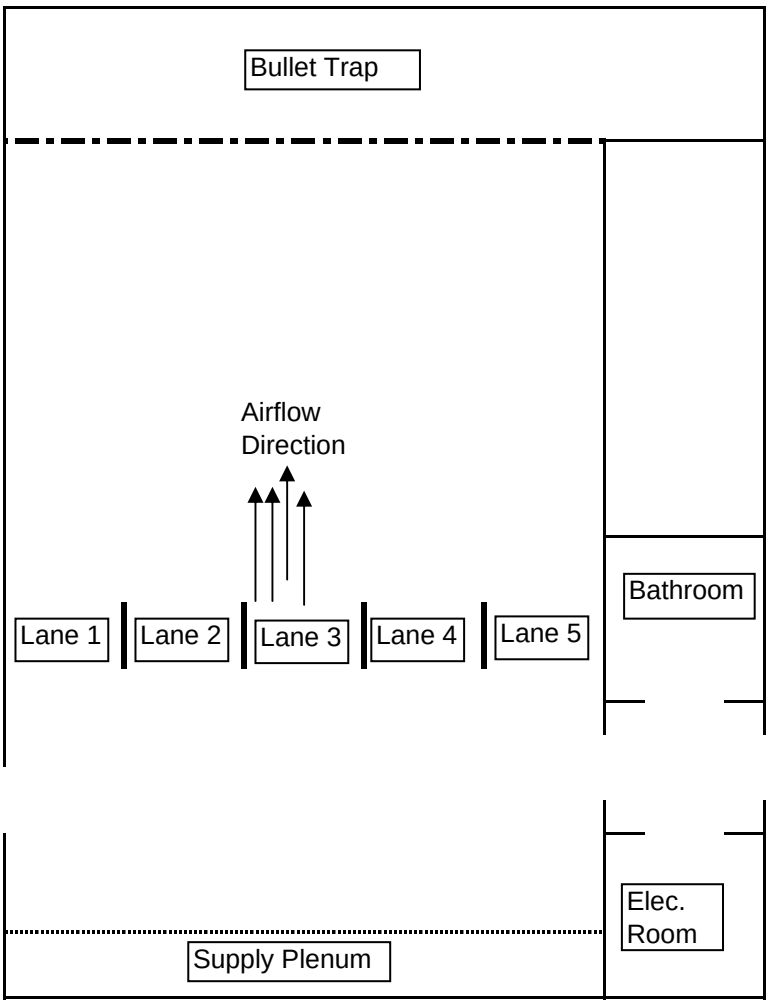
Photograph #1 – IFR Exterior

Photograph #2 – IFR Firing Lines & Bullet Trap

Photograph #3 – Exhaust & Supply Ventilation Control Box Mounted on Supply Plenum

APPENDIX B

SITE MAP



APPENDIX C

LABORATORY SAMPLE RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	**Job Name:**	National Guard Bureau	**Chain Of Custody:**	515794
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	IFR Charleston	**Date Submitted:**	5/3/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/7/2013
Attention:	Non-Responsive				**Report Date:** 5/7/2013

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13059624	1-Joseph Hinchman	Flame	Air	238	N/A	13	ug/m³	13	55	ug/m³	
13059625	2-Chad Board	Flame	Air	240	N/A	13	ug/m³	4.2	18	ug/m³	
13059626	3-Chris Beal	Flame	Air	240	N/A	13	ug/m³	4.1	17	ug/m³	
13059627	4-Will Dempsey	Flame	Air	239	N/A	13	ug/m³	6.5	27	ug/m³	
13059628	5-Behind Line	Flame	Air	242	N/A	12	ug/m³	<3	<12	ug/m³	
13059629	6-Blank	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-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.

Anal: 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) S15794

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: NATIONAL GAURD BUREAU
2. Job Location: IFR CHARLESTON
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Perso [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 + Date Due: 5/10/13
❑ 2 Day
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Incl[redacted] Report
☒ Em[redacted] COMPLIANCEPLACE.com
❑ Fax [redacted] s.army.mil
❑ Ver[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 6 (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	JOSEPH HINCKMAN	4/30/13	238					X		X						
2	CHAD BOARD		240					X		X						
3	CHRIS BEAL		240					X		X						
4	WILL DEMPSEY		239					X		X						
5	BEHIND LINE		242					X		X						
6	BLANK		0					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: 5/3/13 @ Via: FedEx By (Print): [redacted]
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 7995 2491 5080

INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE
CHARLESTON, WV
7 APRIL 2015

1. REFERENCES. See Appendix A.

2. PURPOSE. The purpose of the survey was to evaluate the operating conditions of the Charleston indoor firing range (IFR) for the West Virginia Army National Guard (WVARNG).

3. GENERAL.

a. Survey Personnel. This evaluation was conducted 7 April 2015 by Ms. Non-Non-, Regional Industrial Hygienist, from the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, Havre de Grace, Maryland, Non-, NGB IH Technician, SGT Non-Responsive, WVARNG IH Technician, and Ms. Non-, Industrial Hygienist, from the United States Army Public health Command Region – North (PHCR-N), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Chronic Hazard (Health) RACs are determined by using the RAC tables from the Department of Defense Instruction (DODI) 6055.01 (reference 1). The process by which RACs are determined is presented in Appendix B of this report.

c. Background. This biennial IH evaluation was requested by the NGB Region North IH Office, to evaluate the overall occupational health and safety of the facility. Since it was opened, the Charleston IFR has had an IH evaluation approximately every two years as required by NGR 385-15 (reference 2, 1-15 k).

4. METHODOLOGY.

a. Assessment Criteria. The Department of the Army Pamphlet (DA-PAM) 40-503, mandates that facilities provide healthful work environments in accordance with the most stringent assessment standards applicable (reference 2, 1-8b(3)). The Occupational Safety and Health Administration (OSHA), through the Code of Federal Regulations (CFR), have enforceable regulatory standards for workplace safety (reference 3). The American Conference of Governmental Industrial Hygienists (ACGIH) publishes exposure standards; ventilation design guidance and requirements; and hazard control hierarchies (references 4-5).

b. Calibration. All instruments were calibrated utilizing National Institute of Standards and Technology (NIST) traceable methods and manufacturers' instructions.

c. Methodology. The survey consisted of a visual inspection, ventilation evaluation anemometer measurements, smoke tube testing, area and breathing zone lead air sampling, lead wipe sampling on range surfaces and shooters hands, and illumination measurements. All measurements were collected in accordance with applicable standards.

5. FINDINGS AND DISCUSSION.

a. Inspection Requirements. Records of the annual safety inspection for this range could not be retrieved from a locked office during the site visit. An annual safety inspection using the checklist in NGR 385-15, Appendix F is required on an active range (reference 2, 1-15 a, and 4-3 a). Once the range successfully passes the safety inspection, an IH Evaluation should then be requested from the ARNG Region North IH Office so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first (reference 2, 1-12 b, c, and d).

b. Ventilation.

(1) Negative Pressure. Smoke testing performed at the doorway to the range showed the range to be under negative pressure in relation to the outer room. With the range door slightly open, the smoke was observed clearly entering into the range from the outer room. The smoke was observed moving downrange toward the bullet trap. Smoke testing at the firing line revealed turbulence in lane 5 (reference 2, 2-2 b(1)(i)), and the potential cause is discussed further in paragraph 5b(3) of this report.

(2) Average Airflow at the Firing Line. The minimum average air velocity to be at least 50 feet per minute (fpm) at each firing lane (reference 2, 2-2 b(1)(b)). Ventilation was measured from each of the five firing lanes at the prone, kneeling, and standing firing heights. Average air velocity for lanes 1 through 5 was 166, 112, 134, 112, and 56 fpm, respectively. Because velocity readings can vary by as much as ±10%, the average velocities measured were considered acceptable; however, lane 5 has the potential to drop below the minimum average velocity. Removing obstructions such as the electrical control box from the plenum wall behind lane 5 should resolve this issue.

(3) Obstructions to Airflow. As was noted during the 2007, 2009, and 2013 IH evaluations of this IFR, lane 5 still has a significantly lower air velocity than the other four lanes, attributed to the placement of the control panel on the plenum wall directly behind the lane (see Appendix D, photo D1). During this survey, two push brooms, an industrial size dust pan and a waste basket were also being stored by the plenum wall behind lane 5 (see Appendix D, photo D2). Air velocity measurements and smoke testing indicate that the control box and housekeeping equipment are impeding airflow to lane 5 and therefore, they must be moved outside of the range.

c. Air Sampling.

(1) Air Sample Methodology. For this evaluation, live fire took place over a two and a half hour period with 11 shooters cycling in and out of the 5 lane range. The shooters fired 9 millimeter (mm), .45 caliber, and .22 caliber pistols. The first five shooters started together and ended at roughly the same time with time spent in the range between 67 and 74 minutes. The following six shooters had varying start and stop times with time spent in the range between 27 and 86 minutes. Breathing zone (BZ) lead air samples were taken on all eleven shooters. General areas (GA) lead air samples were collected from behind the bullet trap and in the range foyer/outer room.

(2) Results and Range Classification. BZ and GA air sample results for this survey are given in Appendix C, Table C-1 and Table C-2, respectively. BZ sample results for inorganic lead ranged from less than the lab's minimum detection limit for the air volume sampled to 0.059 milligrams per cubic meter (mg/m^3). The GA sample results for behind the bullet trap was 0.24 mg/m^3 and for the outer room was less than the lab's minimum detection limit for the air volume sampled. In accordance with NGR 385-15, when lead levels exceed 0.05 mg/m^3 but less than 1.0 mg/m^3, the range is classified as **Limited Use** (reference 2, 2-2 f(2)(a)). The maximum hours of allowable lead exposure per day for Guardsmen who use the range less than 30 days per year should be limited to 6 hours per day. Guardsmen on marksmen teams or Guardsmen exposed more than 30 days per year and all non-military personnel should not exceed 4 hours per day of range use; and, range users under years of age or younger should not exceed 2 hours per day (reference 2, Table 1-1). Maximum effort must be made to introduce permanent control measures to reduce the airborne lead levels to the action level of 0.03 mg/m^3 or less (reference 2, 5-5 b). The airborne lead in the unoccupied area behind the bullet trap is expected but could also be an indication that the exhaust air rate may not exceed the supplied air rate by 10% and/or that the exhaust filters need to be changed (reference 2, 2-2 b(1)(c) and b(1)(f)). The area behind the bullet trap should remain unoccupied for at least an hour following live fire to permit airborne lead dust to settle.

(3) Results and Occupational Exposure Limits. Occupational exposure limits (OELs) to include the OSHA permissible exposure limits (PELs) and action levels (ALs), are 8-hour, time-weighted averages (TWA_8). To compare an air sample result to an OSHA PEL-TWA_8 and AL-TWA_8 for compliance, an 8-hour, time-weighted average (TWA_8) is calculated using the analytical result and the formula presented in Figure 1. For lead, the OSHA PEL-TWA_8 is 0.05 mg/m^3 and the AL-TWA_8 is 0.03 mg/m^3 (reference 4, 29CFR1910.1025 (b) and (c)(2)). Table C-3 compares the calculated TWA_8 BZ air samples results to these OSHA standards. BZ samples were used because the TWA_8 results compared to the standards should represent employee's personal exposure, and not GA concentrations (reference 4, 29CFR1910.1025 (d)(3)(iii)). None of the calculated TWA_8 BZ sample results exceeded the OSHA PEL-TWA_8 or AL-TWA_8.

Figure 1.

$$TWA_8 = \frac{(\text{Result 1 X Sample Time 1}) + (\text{Result 2 X Sample Time 2})}{\text{8-Hours (480 minutes)}}$$

d. Wipe Samples. Lead dust wipe samples were collected on the floor in the range, in the foyer to the range, and in the restroom, and on the palm of hands of five shooters. Pre firing wipe samples were taken on the floors to evaluate housekeeping efforts and on the shooters palm to determine if any lead dust was present prior to entering the range. Post wipe samples represent lead dust loads after live firing in the range. Pre and post sample results for the floor samples were well above the 200 micrograms per square foot (µg/ft²) recommended in the NG Pam 420-15 which gives guidance on cleaning an IFR (reference 3, 3-2). See Appendix C Table C-5 for results. Cleaning records for the range were not available to ensure that the range has been cleaned every three months, when there is visible accumulation of dust, and annual (reference 2, 5-4 a(5) and b). Post wipe samples on four of the five shooters palms exceeded 200 µg/ft², as well. Ensure that all individuals on the range thoroughly wash their hands and face immediately after leaving the range (reference 2, B-8 c(2)).

e. Range Maintenance and Use.

(1) Using a broom to round up the bullet casing can be construed as dry sweeping in the range which is prohibited (reference 2, 2-4 e). The brooms should be removed from the building to deter any further use of them in the range (reference 2, 2-4 e). Viable replacements for the brooms are floor squeegees or hockey sticks.

(2) A table was stored in front of the plenum wall and three 55-gallon drums were stored in the area behind the bullet tray (see Appendix D, photos D3 and D4). The table's presence allows for personal equipment to be stored in the range during live fire which could obstruct airflow and become contaminated with lead dust (reference 2, 2-4 h). Overall, the area in front of the plenum wall must remain clear of the airflow obstruction at all times, and storing any equipment inside the range or behind the bullet tray is prohibited (reference 2, 2-3 d and 2-4 b & c). Prior to moving the furniture from the range, ensure it is decontaminated using the guidance in NG Pam 420-15 (reference 3, 3-3).

(3) As stated previously, lead levels above the action level of 0.03 mg/m³ require the implementation of permanent control measures (reference 2, 5-5 b). Removing obstructions to the ventilation is one control measure, the other is improving housekeeping. Routine housekeeping and maintenance is essential to keeping the range operating properly, and to controlling hazards (reference 2, 5-4). Ensure cleaning is performed annually, every three months, and when there is a visible accumulation of lead dust as specified NGR 385.15 (reference 2, 5-4 a(5) & b). Establish a

housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust (reference 2, 5-4 and reference 4, 29CFR1910.1025 (h)(1)). Lead dust concentrations of less than 200 µg/ft² should be the goal. All cleaning procedures should be performed in accordance with the requirements of NGR 385-15 (reference 2, 5-4).

(4) The hand-held ABC-type fire extinguisher should be located inside the range (reference 2, 2-3 e). The inspection tag on the fire extinguisher is expired (see Appendix D, photo D9). Ensure that the fire extinguisher is in proper working order in accordance with OSHA 29 CFR 1910.157, Portable Fire Extinguishers standard (reference 4).

f. Range Lighting. Illumination was measured in the area behind the shooters, at the firing line, at the targets and behind the bullet trap. The light measurements at the firing line were below their respective 60 foot-candles (fc) required IAW NGR 385-15. However, the NGR 385-15 firing-line lighting requirements are more conservative than the standards published in the most recent IESNA Lighting Handbook (reference 7, Table 23.2). The ARNG IH Office is using the IESNA level of 30 fc at the firing line and target location pending an update of NGR 385-15. See Appendix C, Table C-4 for illumination results. A few overhead lights protruded below the range ceiling and was corrected during this evaluation. Range lighting must be protected by baffles to prevent breakage and ricochets (reference 2, 2-2 a(1)(b) and c(2)(c)).

g. Bullet trap. The bullet trap has full bullet trays and appeared to need lubrication (see Appendix D, photos D5 and D6). The bullet trap is required to be cleaned every 480 hours of use or when the trap is three quarters full, whichever occurs first (reference 2, 5-3 b). The lubrication of the bullet trap is required every three months along with a thorough inspection of the ventilation system including filters, louvers, and bullet trap (reference 2, 5-3 a).

h. Target and Target Carrier. The target retrieval system as O-rings anchoring the system to the ceiling downrange may cause a bullet to ricochet if hit (see Appendix D, photo D10). An angled metal cover should be installed over these sections of the retrieval system (reference 2, 2-2 e(1)(a)).

i. Range Standard Operating Procedure (SOP). The Range SOP was not on-hand during this evaluation. Range users should be made aware of where to properly store the bullet casing squeegees along with who to contact to schedule the range for cleaning when there is visible debris (reference 2, 3-3 b(8)).

j. Employee Notification and Exposure Records.

(1) Notification. The OSHA 29 CFR 1910.1200 Hazard Communication standard requires employees to be notified of this study and its findings (reference 4).

Additionally, OSHA 29 CFR 1910.1027 requires employees be notified within 15 days of receipt of this information (reference 4).

(2) Exposure Record. Employee exposure monitoring results were transferred to DA Form 4700, Supplemental Medical Data, as required by AR 40-66, Figure 7-1, to ensure that they are not removed during routine medical records purging (reference 5).

6. CONCLUSION. Based on results of this survey this range is classified as **Limited Use**. Maximum effort must be made to introduce permanent control measures to reduce the airborne lead levels to 0.03 mg/m³ or less (reference 2, 5-5 b). Recommendations in this report are provided to decrease lead levels, improve the range classification to Safe, and contribute to the healthfulness of this facility.

7. RECOMMENDATIONS.

a. Inspection Requirements.

(1) Annual Safety Inspection. Continue the annual safety inspection of the range using the Appendix F checklist in NGR 385-15 (reference 2, 4-3 a). **(RAC 4)**

(2) ARNG Region North IH Inspection. Notify the ARNG Region North personnel after the completion of the annual safety inspection and after changes or additions have been made to the range so that the ventilation system and air sample can be conducted (reference 2, 4-3 c and d). **(RAC 4)**

b. Ventilation Requirements. Remove the control box from plenum in front of lane 5 to ensure continues air flow above 50 fpm at all points along the firing line (reference 2, 2-2 b(1)(b) and 2-4 c). **(RAC 3)**

c. Air Samples. Enforce limited use as specified in section 5 c(2) of this report to ensure range users are not over exposure to lead (reference 2, Table 1-1). **(RAC 2)**

d. Wipe Samples. Ensure that all individuals on the range thoroughly wash their hands and face immediately after leaving the range (reference 2, B-8 c(2)). **(RAC 3)**

e. Range Maintenance and Use.

(1) Remove all brooms from the range and replace with floor squeegees (reference 2, 2-4 e). (**RAC 4)**

(2) Remove housekeeping equipment and furniture from the range and ensure the housekeeping equipment has a designated store area or cabinet outside the range (reference 2, 2-3 d). **(RAC 3)**

(3) Ensure the IFR is cleaned and as free as practicable of lead dust accumulations (reference 2, 5-4). Ensure cleaning is performed annually, every three months, and when there is a visible accumulation of lead dust (reference 2, 5-4 a(5) & b). **(RAC 3)**

(4) Ensure that the range fire extinguisher is mounted in the range and has had an annual maintenance check and is visually inspected monthly (reference 2, 2-3 e and reference 4, 29CFR1910.157). **(RAC 4)**

f. Bullet Traps. Ensure that the bullet trap trays are emptied and the steel panels are lubricated as required by NGR 385-15 (reference 2, 5-3 a and b). **(RAC 3)**

g. Target and Target Carrier. Install an angled cover over the O-rings mounting the retrieval system to the ceiling downrange to prevent ricochets (reference 2, 2-2 e(1)(a)). **(RAC 5)**

h. Employee Notification and Exposure Record.

(1) Notification. Notify employees of this study and its findings (reference 4, 29CFR1910.1200 and 1027). **(No RAC Assigned)**

(2) Exposure Record. Transfer chemical exposure DA Form 4700s, Supplemental Medical Data into employee Medical Records (reference 5). **(No RAC Assigned)**

7. ADDITIONAL ASSISTANCE. The technical point of contact is Non-Responsive at (410) 942-0273 ext 103, or Non-Responsive .civ@mail.mil. For follow up contact the WVARNG Occupational Health Nurse, LTC Non-, at (304) 352-3620, or Non- .mil@mail.mil.

Non-Responsive
Industrial Hygienist

APPROVED BY:

Non-Responsive
ARNG Regional Industrial Hygienist

APPENDIX A
REFERENCES

1. Department of Defense Instruction (DoDI) 6055.1, Department of Defense (DoD) Safety and Occupational Health (SOH) Program, 14 October 2014.

2. National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Army National Guard Indoor Firing Ranges, 3 November 2006.

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

4. Occupational Safety and Health Administration (OSHA), Title 29 Code of Federal Regulations (CFR), Part 1910, General Industry, 2014 Edition.

5. Army Regulation (AR) 40-66, Medical Record Administration and Health Care Documentation, 4 Jan 2010.

6. American National Standards Institute (ANSI) / Illumination Engineering Society of North America (IESNA), The Lighting Handbook, 10th Edition, 2011

ARNG-CSG-P
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range, Charleston, West Virginia, 7 April 2015

APPENDIX B
DERIVING RISK ASSESSMENT CODES (RACs) FOR CHRONIC HAZARDS
Department of Defense Instruction 6055.01, Appendix to Enclosure 3
Department of Defense Occupational Safety and Health Program, 14 October 2014

1. DETERMINE THE HEALTH HAZARD SEVERITY CODE (HHSC). Use the following procedures to assess exposure and medical effects points and determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a single physical, chemical, or biological agent and the effects of chronic exposure.

a. Determine Exposure Points.

AER Possible?	Exposure Condition			
	95th percentile <10% of OEL	95th percentile between 10% of OEL and 50% of OEL	95th percentile between 50% of OEL and OEL	95th percentile >OEL
No	0	3	5	7
Yes	1 – 2	4	6	9

AER = Alternate exposure route, such as skin absorption, ingestion.
OEL = Occupational Exposure Limit, such as OSHA PEL or ACGIH® TLV®.

b. Determine Medical Effects Points.

Condition	Points
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1 - 2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3 - 4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5 - 6
Permanent, severe, disabling, irreversible illness, such as asbestosis, lung cancer, or death	7 - 8

c. Determine the HHSC by totaling the points assessed.

Total Points (sum of Exposure Points [1a] and Medical Effects Points [1b])	HHSC
13 – 17	I
9 – 12	II
5 – 8	III
0 – 4	IV

ARNG-CSG-P
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range, Charleston, West Virginia, 7 April 2015

APPENDIX B (CONTINUED)

2. DETERMINE THE EFFECT PROBABILITY CATEGORY (EPC). Use the following procedures to assess exposure frequency and duration to determine the effect probability category (EPC). The EPC is a function of the duration and frequency of exposure and the number of exposed personnel.

a. Determine Duration and Frequency of Exposure Points. Add exposure duration points and exposure frequency points, divide total by 2, then round UP.

Points	Exposure Duration							
	>8 hours/day	6-8 hours/day	4-6 hours/day	2-4 hours/day	1-2 hours/day	30-60 minutes/ day	15-30 minutes/ day	0-15 minutes/ day
	8	8	6	5	4	3	2	1
Points	Exposure Frequency							
	Daily	2-3 times/week	Weekly	2-3 times/ month	Monthly	Quarterly or 2-3 times/year	Annual	Less than Annual
	8	7	6	5	4	3	2	1

b. Determine Number of Exposed Personnel Points.

Number of Exposed Workers	Points
< 5	1 - 2
5 - 9	3 - 4
10 - 49	5 - 6
> 49	7 - 8

c. Determine the EPC by totaling the points assessed.

Total Points (sum of Exposure Duration and Frequency Points [2a] and Exposed Personnel Points [2b])	EPC
13 – 17	A
9 – 12	B
5 – 8	C
0 – 4	D

APPENDIX B (CONTINUED)

3. Determine the RAC for Chronic Hazards.

HHSC	EPC			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

4. RAC Descriptor.

RAC	Descriptor
1	Critical
2	Serious
3	Moderate
4	Minor
5	Negligible

APPENDIX C
SAMPLING RESULTS

Table C-1. Breathing Zone Air Sample Results Compared to Range Classification Standard, NGR 385-15

Sample ID Number	Lane	Rounds Used	# of Rounds Fired	Sample Time (minutes)	Sample Result (mg/m³)	Met Standard (< 0.05 mg/m³)
IFR1	1	9 mm .22	150 35	72	0.030	Yes
IFR2	2	9 mm .45	150 134	73	<0.014	Yes
IFR3	3	.22	130	67	<0.015	Yes
IFR4	4	9 mm .45	105 72	77	<0.013	Yes
IFR5	5	9 mm .45	110 134	74	0.043	Yes
IFR8	--	9 mm .45	60 20	27	0.037	Yes
IFR9	--	9 mm .45	200 200	86	0.018	Yes
IFR10	**4**	**.45**	**800**	**53**	**0.059**	**No**
IFR11	--	9 mm	35	42	<0.024	Yes
IFR12	1	9 mm	150	42	0.028	Yes
IFR13	--	9 mm .40	---	69	<0.014	Yes

min = minutes mg/m³ = milligrams per cubic meter

Results – Grey in color were less than the lab's minimum detection limit.

Results – Black in color were detected but not above the NGB 385-15 standard.

Results – Bold were above the NGB 385-15 standard.

Table C-2. Area Air Sample Results Compared to Range Classification Standard, NGR 385-15

Sample ID Numbers	Location	Sample Result (mg/m^3)	Standard (mg/m^3)	Met Standard (< 0.05 mg/m³)
IFR 6	Behind Bullet Trap	0.240	0.05	No
IFR 7	Foyer / Outer Room	<0.004	0.05	Yes
IFR14	N/A	<0.003	N/A	N/A

mg/m³ = milligrams per cubic meter

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range, Charleston, West Virginia, 7 April 2015

APPENDIX C. SAMPLE RESULTS (continued)

Table C-3. Breathing Zone Air Sample Results during Live Fire as Calculated 8-Hour Time-Weighted Average Concentrations (TWA_8) and Compared to OSHA Permissible Exposure Limit (PEL) TWA_8 and Action Level (AL) TWA_8 for Lead

Sample ID Number	Sample time (min)	Air Sample Result (mg/m^3)	Calculated TWA_8 (mg/m^3)	Met AL-TWA_8 (<0.03 mg/m^3)	Met PEL-TWA_8 (<0.05 mg/m^3)
IFR1	72	0.030	0.0044	Yes	Yes
IFR2	73	<0.014	<0.0021	Yes	Yes
IFR3	67	<0.015	<0.0021	Yes	Yes
IFR4	77	<0.013	<0.0021	Yes	Yes
IFR5	74	0.043	0.0066	Yes	Yes
IFR8	27	<0.037	<0.0021	Yes	Yes
IFR9	86	0.018	0.0032	Yes	Yes
IFR10	53	0.059	0.0065	Yes	Yes
IFR11	42	<0.024	<0.0021	Yes	Yes
IFR12	42	0.028	0.0025	Yes	Yes
IFR13	69	<0.014	<0.0020	Yes	Yes

min = minutes mg/m^3 = milligrams per cubic meter

Table C-4. Light Level Results Compared to NGB Approved Standards Set by the Illumination Engineering Society North America (IESNA)

Location	Level (fc)	Standard (fc)	Met Standard
Behind Lane 1	50	50	Yes
Behind Lane 3	73	50	Yes
Behind Lane 4	64	50	Yes
Lane 1 Firing Line	27	30	Yes
Lane 2 Firing Line	48	30	Yes
Lane 3 Firing Line	56	30	Yes
Lane 4 Firing Line	46	30	Yes
Lane 5 Firing Line	26	30	Yes
Lane 1 Target	133	30	Yes
Lane 2 Target	95	30	Yes
Lane 3 Target	131	30	Yes
Lane 4 Target	90	30	Yes
Lane 5 Target	118	30	Yes
Behind Bullet Trap	22	20	Yes

fc = footcandles

APPENDIX C. SAMPLE RESULTS (continued)

Table C-5. Lead Wipe Sample Results Collected in the Range and Adjacent Areas and on the Palms of Shooters

Sample ID Number	Location	Result (µg/ft²)	Met Standard (< 200 µg/ft²)
IFRW 1	Floor Behind Lane 2 by Table – Pre Firing	1900	No
IFRW 5	Floor Behind Lane 2 by Table – Post Firing	1900	No
IFRW 2	Floor Foyer / Outer Room – Pre Firing	4400	No
IFRW 6	Floor Foyer / Outer Room – Post Firing	5000	No
IFRW 3	Floor Washroom – Pre Firing	6300	No
IFRW 7	Floor Washroom – Post Firing	1400	No
IFRW 4	Floor Lane 3 at Firing Line – Post Firing	2800	No
IFRW 8	Palm Lane 5 Shooter - Pre Firing	<120	Yes
IFRW 9	Palm Lane 5 Shooter - Post Firing	510	No
IFRW 10	Palm Lane 4 Shooter - Pre Firing	<140	Yes
IFRW 11	Palm Lane 4 Shooter - Post Firing	260	No
IFRW 12	Palm Lane 2 Shooter - Pre Firing	<140	Yes
IFRW 13	Palm Lane 2 Shooter - Post Firing	720	No
IFRW 14	Palm Lane 1 Shooter - Pre Firing	<100	Yes
IFRW 15	Palm Lane 1 Shooter - Post Firing	100	Yes
IFRW 16	Palm Lane 4 Shooter - Post Firing	590	No
IFRW 17	Field Blank	<10	Yes

µg/ft² = micrograms per square foot

ARNG-CSG-P
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range, Charleston, West Virginia, 7 April 2015

APPENDIX D
PHOTOGRAPHS

Photo D1. Control box on plenum wall blocking airflow.

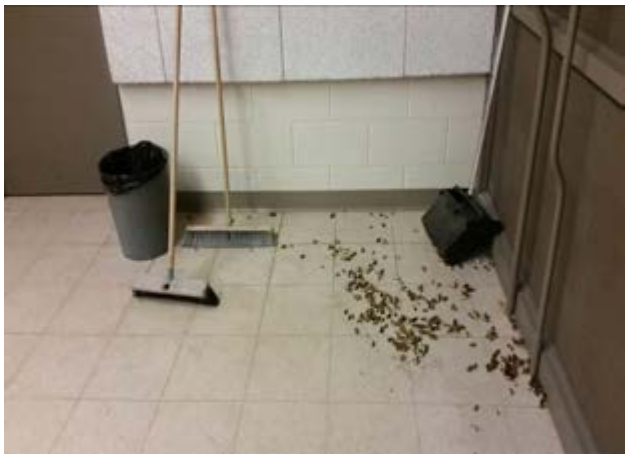

Photo D2. Housekeeping equipment stored in range. Brooms are prohibited.

Photo D3. Table stored in range. Chairs and items on table were removed before live firing took place.

Photo D4. Area behind bullet trap: 1) bullets from bullet trays over flowing on the floor and 2) storing 55 gallon drums

APPENDIX D. PHOTOGRAPHS (continued)

Photo D5. Bullet trays more than ¾ full of bullet casings.

Photo D6. Lubricant dried to the back of the bullet trap panel.

Photo D7. Signage and fire extinguisher in outer room on door to the range.

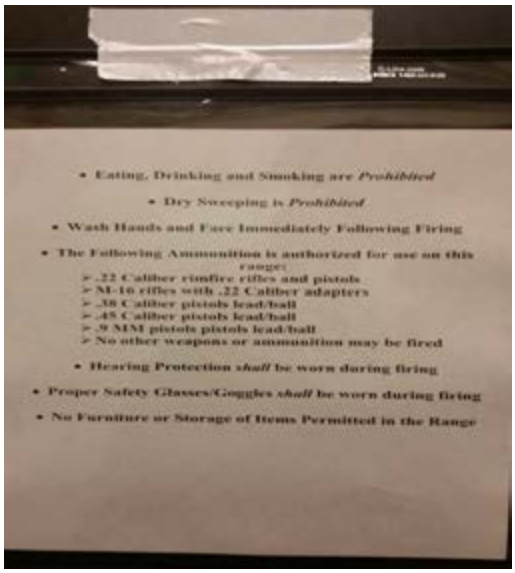

Photo D8. Signage posted to cabinet in outer room.

APPENDIX D. PHOTGRAPHS (continued)

Photo D9. Fire extinguisher with expired annual inspection tag.

Photo D10. Exposed O-ring on target retrieval system downrange.

Industrial Hygiene Evaluation

Army National Guard (ARNG)
Armory
Eleanor, WV

Prepared For:	**NGB – Region North IH Office**
Survey Location:	**Armory** **Winfield Locks** **Eleanor, WV 25070**
Prepared By:	**Analytical Laboratory Services, Inc. (ALSI)**
Survey Date:	**February 16, 2006**
Report Date:	**March 15, 2006**
ALSI Project #:	**0603110**

Non-Responsive

Director, Environmental Health & Safety

Table of Contents

Section 1.0 Executive Summary

The following are the major findings and recommendations obtained during an industrial hygiene survey conducted at the Eleanor (WV) Armory located at Winfield Locks, WV 25070 by Analytical Laboratory Services, Inc. (ALSI) Industrial Hygienist Mr Non-[redacted]. The survey was performed on February 16, 2006. The following are the major findings and recommendations obtained from the survey.

Findings	Recommendations	RAC
Noise Dosimetry		
A sound level meter survey was performed inside the Armory and all sound levels monitored were below 85 dBA.	No further action required.	3
Lighting		
Lighting was adequate in all areas of the shop tested.	No further action required.	4
Housekeeping		
Housekeeping conditions were adequate.	No further action required.	4

Section 2.0 Introduction

On February 16, 2006, Analytical Laboratory Services, Inc. (ALSI) conducted an industrial hygiene survey, including sound level monitoring and lighting measurements at the Armory located at Winfield Locks, WV 25070. Monitoring was performed at the request of Ms Non-Non-, CIH, and was performed in accordance with the Statement of Work for Industrial Hygiene Services provided by National Guard Bureau, Region North Industrial Hygiene office. ALSI Industrial Hygienist Mr. Non- performed the on-site survey work. The primary objective was the determination of potential partial and full-shift employee exposures to chemical and/or physical hazards as well as an evaluation of training programs, work practices and overall safety of the shop.

The Armory provides administrative support for military purposes, storage space for arms and military equipment and serves as a general meeting building for military personnel. This is a brand new facility that was receiving its first occupants during the week of 2/12/06 There is a projection for 35-40 total employees to be working the Eleanor (WV) Armory. On the date of survey, 2 workers were present and none were sampled for noise or chemicals. The following is a facility/activity summary:

Parameters	Armory
Area of facility	24, 300 sq. ft.
Number of maintenance bays	0
Total number of personnel	35 – 40 (projection)
Number of administrative personnel present	0
Number of maintenance personnel present	2
Work schedule	700 - 1530
Battery charging room	No
Brake replacement	No
Soldering	No
Abrasive blasting	No
Spray paint booth	No
Sheet metal work	No
Welding	No
Solvent parts washer	No
Detergent (soap) parts washer	No
Local exhaust ducts for vehicles	No
Flammable storage cabinets	No
MSDS & Chemical Inventory list	Yes
Emergency eye-wash & shower	No
Fixed carbon monoxide meter	No
Powered Industrial Trucks	No
Lighting	Fluorescent
Posted for Hazards and PPE	Yes
Hearing Protection (HP) worn	No
First Aid Station	Yes - 1
Fire Extinguishers	Yes -12
Grinders	No
Presses	No

Section 3.0 Sampling Strategy

The monitoring strategy for this survey included the following:

1. General area sound level monitoring was performed at various locations inside the Armory.

2. General area lighting monitoring was performed at various locations inside the Armory.

Sampling was conducted on 1st shift. Conditions and exposures are believed to be representative of the highest exposure conditions for that day.

Section 4.0 Monitoring Methods

Sound Level Meter Survey

A sound level meter survey was performed inside the Wheeling (WV) Armory using a Larson Davis Sound Track LXT octave band analyzer (OBA). The OBA was set to measure noise exposure using DA sampling criteria. DA sampling criteria are more stringent than the OSHA standard for noise. It has been proven to be more effective in protecting worker hearing. The next calibration due date for the OBA is July 2006. The octave band analyzer for this survey was set to the following parameters.

Filter	Response Rate	Exchange Rate	Threshold	Dose Criterion	Upper Limit
A Weighting	Slow	3	80	85	130

Light Measurements

Light measurements were taken with a properly calibrated Cooke Cal Light Meter Model 400 Serial # K98364. The next calibration due date for the Cal Light Meter is 12/19/06.

Section 5.0 Industrial Hygiene Measurements

Table 5.1 Sound Level Meter Survey Results – Armory Eleanor, WV Date:2/14/06

Location	Sound Level (dBA)	DA Requirement For Inclusion in Hearing Program 8-hour TWA (dBA)
Drill Hall	55 – 65	85
Main Lobby	62 – 65	85
Recruiting Office	50 – 58	85
Classroom Hallway	56 – 60	85

Table 5.2 Lighting Survey Results - Armory, Eleanore, WV Date: 2/14/06

Location	Light Source	Measurement in Foot Candles	Recommended	Adequate ?
Drill Hall	Fluorescent	88	20	Yes
Main Lobby	Fluorescent	73	20	Yes
Hallways	Fluorescent	80	20	Yes
Recruiting Office	Fluorescent	85	50	Yes
Classroom Hallway	Fluorescent	80	20	Yes

Table 5.4 Note:

1. Lighting levels are compared to the levels given in ANSI/IES-RP-7-2001, American National Standard Practice for Industrial Lighting and standard used by the ARNG.

Section 6.0 Findings and Discussion

Occupational health risks at the Armory in Eleanor WV are, for the most part, minimal or well controlled. The following findings and discussion are based on sampling results and observations from the day of the survey.

1. Sound Level Meter Survey (See Table 5.1):
   Sound level meter readings taken throughout the interior of the Eleanor (WV) Armory on the date of survey were below levels which would indicate a potential noise exposure concern.

2. Lighting Levels (Table 5.2): Lighting levels evaluated in the Eleanor (WV) Armory were at or above guidelines recommended in ANSI/IES-RP-7-2001, American National Standard Practice for Industrial Lighting. This is the standard used by the ARNG.

Section 7.0 Recommendations

Based on sampling results and conditions, as they existed during this survey, ALSI offers the following recommendations.

1. If operations change significantly from conditions of this survey, additional exposure monitoring should be performed on workers. RAC 3

   Citation source: Professional judgment, various Army and OSHA standards.

Appendix A. Abbreviations & Acronyms (Alphabetically Listed)

ACGIH = American Conference of Governmental Industrial Hygienists

Action Level = One half of the PEL or a value close to half specifically established for a substance by OSHA.

ARNG = Army National Guard

C= Ceiling value: the concentration that shall not be exceeded during any part of the working exposure.

DA = Department of the ARMY.

I = Inhalable fraction of the aerosol, (ACGIH).

OSHA = Occupational Safety and Health Administration

PEL = The Permissible Exposure Limit established by the Occupational Safety and Health Administration (OSHA). This is a government regulatory standard. Compliance with PEL's is mandatory. PEL's have been established based on 8-hour workdays and 40-hour workweeks.

STEL = Short Term Exposure Limit: the concentration that shall not be exceeded over and average of 15 minutes.

TLV-TWA = The Year 2006, Threshold Limit Value for Chemical Substances established by ACGIH. This is a health-based standard that is recommended but not required by law. The time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effect.

TWA = Time Weighted Average

Appendix B. Noise Compliance Checklist

Noise Compliance

The following is a checklist that **summarizes** parts of the DA Pamphlet 40-501, Hearing Conservation Program. It was created to help assist in implementing a hearing conservation program, assess compliance with DA requirements, and determine program effectiveness. DA requires the installation commander to administer an effective hearing conservation program to include:

1. Noise hazard identification;
2. Engineering controls;
3. Hearing protectors;
4. Monitoring audiometry;
5. Health education;
6. Enforcement;
7. Program evaluation.

This checklist provides an overview of the DA standard for occupational noise exposures. See the entire standard for complete information.

Noise Hazard Identification (Chapter 4)

- Noise survey to include determining TWA shall be performed in all noise hazardous areas, vehicles, and equipment at least once and within 30 days of change in operation.
- A Type 2 sound level meter (ANSI approved) shall be used.
- TWA shall be determined using a noise dosimeter measuring:
    1. Slow response;
    2. Integrating sound levels from 80-130dB;
    3. 3-dB time-intensity exchange rate;
- Equipment utilized shall be properly calibrated.

Engineering Controls (Chapter 5)

- Engineering controls are most preferred method for controlling noise exposure if implementation is feasible and if technologically and operationally practical and cost effective.
- When possible, utilize engineering controls to reduce steady state noise levels below 85 dBA and impulse noise levels below 140 dBP.

Hearing Protectors (Chapter 6)

- Proper hearing protection is required for all personnel working in, or visiting, noise hazardous areas.
- Hearing protection is required in areas where steady-state noise equals or exceeds 85 dBA or 140 dBP, regardless of duration.
- Double hearing protection required when steady state noise exceeds 103 dBA TWA. Greater than 108 dBA TWA, exposure is not permitted.

Monitoring Audiometry (Chapter 7)

- Reference and termination audiograms required for all soldiers and for civilian personnel in noise hazardous areas.
- Personnel shall be enrolled in a comprehensive hearing conservation program when they are exposed to:
    - Steady-state noise with a TWA of 85dBA or greater.
    - Impulse noise of 140 dBP or greater.
    - Airborne high-frequency of ultrasonic noise.
    - Known or suspected ototoxins.

Health Education (Chapter 8)

- Training on noise hazards, controls, PPE, etc. required for all noise-exposed personnel.

Enforcement (Chapter 9)

- Command emphasis shall be placed on all elements of the HCP.
- 1st line supervisors shall enforce hearing protection requirements.

Program Evaluation (Chapter 10)

- Each installation's HCP shall be evaluated internally and externally to assess the program effectiveness.

Appendix C. Definitions Related to Sound

Definitions Related to Sound

Action Level – The sound level which when reached or exceeded necessitates implementation of activities to reduce the risk of noise induced hearing loss. OSHA currently uses an 8-hour time weighted average of 85 dBA as the criterion for an effective hearing conservation program.

Attenuation (Real-World) – Estimated sound protection provided by hearing protective devices as worn in "real-world" environments.

dB (Decibel) – The unit used to express the intensity of sound. The decibel scale is a logarithmic scale in which 0 dB approximates the threshold of hearing in the mid frequencies for young adults and in which the threshold of discomfort is between 85 and 95 dB SPL and the threshold of pain is between 120 and 140 dB SPL.

Criterion Level – is the maximum allowable exposure to accumulated noise; it gives the conditions that result in 100% dose. The criterion level is typically set by DA or a regulatory agency such as OSHA and is usually not applicable for community noise monitoring.

Dose - The noise exposure expressed as a percentage of the maximum allowable daily exposure to accumulated noise (related to the criterion level). For DA, a 100% dose would equal an 8-hour TWA of 85 dBA.

Dosimeter – When applied to noise, refers to an instrument that measures sound levels over a specified time interval, stores the measures, and calculates the sound as a function of sound level and sound duration and describes the results in terms of, dose, time-weighted average, and perhaps other parameters.

Exchange Rate (doubling rate) – The relationship between intensity and dose. DA uses a 3-dB exchange rate. Thus, if the intensity of an exposure increases by 3-dB, the dose would double.

Impulse Noise – Used to generally characterize unweighted impact or impulse noise that is typified by a sound which rapidly rises to a sharp peak and then quickly fades. The sound may or may not have a "ringing" quality (such as striking a hammer on a metal plate or a gunshot in a reverberant room). Impulsive noise may be repetitive, or may be a single event (as with a sonic boom). Note: if the impulses occur in very rapid succession (such as with some jackhammers), the noise would not be described as impulsive.

Max Level (Lmax) – is the highest sampled A-weighted sound level during the instrument's run time allowing for the RESPONSE that the unit is set for (fast or slow).

Noise – Any unwanted sound.

Noise Induced Hearing Loss – A sensorineural hearing loss that is attributed to noise and for which no other etiology can be determined.

NRR (Noise Reduction Rating) – The NRR is a single-number rating method, which attempts to describe a hearing protector based on how much the overall noise level is reduced by the hearing protector.

Peak Level (Noise) – is the highest instantaneous sound level that the microphone detects. Unlike the MAX LEVEL, the peak is detected independently of the slow or fast RESPONSE that the unit is set for.

Permissible Exposure Limit (PEL Noise) – The Occupational Safety and Health Administration (OSHA) permissible exposure limits; presently 90 dBA. A time-weighted average exposure that must not be exceeded during any 8-hour work shift of a 40-hour workweek.

Presbycusis – The gradual increase in hearing loss that is attributable to the effects of aging, and not related to medical causes or noise exposure.

Response (fast or slow) – a setting (on the dosimeter) that determines how quickly the unit responds to fluctuating noise. Fast has a time constant of 125 milliseconds. Slow has a time constant of 1 second.

Sound Pressure Level (SPL) – A measure of the ratio of the pressure of a sound wave relative to a reference sound pressure. Sound pressure level in decibels is typically referenced to 20μPa. When used alone, (e.g., 90 dB SPL) a given decibel level implies an unweighted sound pressure level.

Threshold Limit Value (TLV) – A guideline provided by the American Conference of Governmental Industrial Hygienists to denote the exposure which, when reached or exceeded, may be hazardous. For noise the TLV is 85 dBA and the exchange rate is 3 dB.

Time Weighted Average (TWA Noise)– The Time Weighted Average Sound Level, expressed in dBA, which is computed so that the resulting average would be equivalent to an exposure resulting from a constant noise level over an 8-hour period.

Weighted Measurements – Weighting (A, B, C, and Linear) are commonly applied to measures of sound levels to account for the way the ear perceives the "loudness" of sounds.

1. **A-Weighting:** is the most commonly used filter in both industry noise applications (OSHA) and community noise regulations. "A" weighted measurement is often reported as dBA. The "A" weighted filter attempts to make the dosimeter respond closer to the way the human ear hears. It has the added advantage of being correlated with annoyance measures and is most responsive to the mid frequencies, 500 to 4000 Hz.
2. **B-Weighting:** is similar to "A" weighting but with less attenuation. The "B" weighting is very seldom, if ever, used.
3. **C-Weighting:** provides a fairly flat frequency response with only slight attenuation of the very high and very low frequencies. "C" weighting is intended to represent how the ear perceives sound at high decibel levels and is often used as a "flat" response when linear is not available. "C" weighted measurements are often reported as dBC.

Appendix D. References

1. ACGIH. Threshold Limit Values for Chemical and Physical Agents, American Conference of Governmental Industrial Hygienists, Cincinnati, OH, 2006.

2. ACGIH. Industrial Ventilation A Manual of Recommended Practice, 25th Ed., American Conference of Governmental Industrial Hygienists, Cincinnati, OH, 2004.

3. OSHA. Z Tables, Limits for Air Contaminants (General Industry). Code of Federal Regulations, Title 29, Chapter XVII, Part 1910, Section 1000.

4. OSHA. Respiratory Protection (General Industry). Code of Federal Regulations, Title 29, Chapter XVII, Part 1910, Section 134.

5. OSHA. General Requirements (General Industry). Code of Federal Regulations, Title 29, Chapter XVII, Part 1910, Section 252.

6. AIHA. Noise & Hearing Conservation Manual, American Industrial Hygiene Association, Akron, OH, 1991.

7. NIOSH. Preventing Occupational Hearing Loss - A Practical Guide, National Institute for Occupational Safety and Health, Cincinnati, OH, 1996.

8. OSHA Occupational Exposure to Noise. Code of Federal Regulations, Title 29, Chapter XVII, Part 1910, Section 95.

9. AR Regulation 11-34. The Army Respiratory Protection Program, February 1990.

10. AR Regulation 40-5. Medical Services Preventive Medicine, July 2005.

11. AR Regulation 385-10. The Army Safety Program, Feb. 2000.

12. DOD Instruction Number 6055.1. DOD Safety and Occupational Health Program, February 1998.

13. DA PAM 40-501. Medical Services Hearing Conservation Program, December 1998.

14. Design Guide 415-2. Ventilation Requirements for Battery Rooms.

15. Lighting Handbook, Illuminating Engineering Society of North America, 8th Ed 1993 (Pg. #'s 460 - 463); and Industrial Lighting, ANSI/IES RP7, 2001.

16. Job-Site Evaluations for Emergency Fixtures. Occupational Health & Safety, pages 52-57, 10/02.

Appendix E. Photographs of Facility and Operations – Eleanor, WV Armory

Appendix F. Shop Layout and Evacuation Plan – Eleanor, WV Armory

Appendix G. Vehicle and Equipment Hazardous Materials List – Eleanor, WV Armory

ENVIRONMENTAL MANAGEMENT SOLUTIONS
INDUSTRIAL HYGIENE CONSULTING

WEST VIRGINIA ARMY NATIONAL GUARD
HUNTINGTON INDOOR FIRING RANGE
HUNTINGTON, WEST VIRGINIA

PO BOX 6893, DOUGLASVILLE, GEORGIA 30154
PHONE: 678.596.8509 • FAX: 770.214 6297

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EXECUTIVE SUMMARY

FINDINGS	RECOMMENDATIONS	RAC
This range has been classified as safe based on evaluation of the building envelope, range use, and ventilation measurements.	No recommendations regarding classification of the range. It may remain classified as a safe range	RAC 2
BUILDING ENVELOPE		
Pipes are not adequately baffled and are left exposed	Pipes, conduits, and other projecting surfaces should be baffled or covered by a protective material	RAC 2
Water was found seeping into the range	Weather-strip all access doors to the range to prevent leakage of lead dust and debris into outlying areas.	RAC 2
RANGE LIGHTING		
Lighting was below the required levels at the target line and bulbs were burned out.	Increase range lighting to appropriate levels and replace burned out bulbs.	RAC 3
Lighting behind bullet trap does not have the required light levels.	Increase lighting to appropriate levels to allow maintenance personnel to adequately see tasks during maintenance procedures	RAC 3
BULLET TRAPS		
Bullet collection bins were full and overflowing	Bullet collection bins should be emptied after being ¾ full.	RAC 3
TARGET AND TARGET CARRIERS		
Cardboard targets with wooden stakes are being used along with paper targets during firing	Only paper targets should be used in the range	RAC 4
RANGE USE		
Ladders were found stored in the plenum area. Chairs, a gate, Christmas tree, and other items were found stored in the bullet trap area.	No items should be stored in the firing range at any time. Stored should be decontaminated and removed.	RAC 2
Shotgun shells were found downrange, which may be an indication of unauthorized firers and ammunition	Pellets, BBs, magnum, and armor piercing rounds should not be used in this range under any circumstances. The range should be restricted to unauthorized firers	RAC 2
RANGE MAINTENANCE		
The current range officer and custodian have both been deployed and neither has been replaced	A range custodian must be appointed who is fully trained and aware of the responsibilities of cleaning the range	RAC 2
PERSONAL PROTECTIVE EQUIPMENT		
No personal protective	All personnel should wear ANSI	RAC 4

FINDINGS	RECOMMENDATIONS	RAC
equipment was observed in the area.	approved hearing and eye protection. Protections should be placed in the vicinity of the entrance door	
	POSTING OF SIGNS	
An illuminated sign is not present to alert personnel while range is in use	An illuminated sign should be interlocked with range ventilation to alert individuals outside when the range is in use.	RAC 4
Firing lanes are numbered only at the firing line.	Firing lanes should be numbered at the firing line and at the bullet trap and visible to all shooters	RAC 4
The access door to the bullet trap is not posted	A warning sign should be posted on the access door warning personnel not to enter.	RAC 3
	RECORD KEEPING	
The visitor's log did not meet all requirements	Visitor's log is required to record name and age of firer, organization, sign in and out time, type of ammunition, and number of rounds fired.	RAC 2
A range officer and custodian have been deployed and an interim officer and custodian have not yet been assigned	State maintenance officers and custodians must be fully trained on an annual basis on the effects from exposure to lead dust and the appropriate precautions that must be taken	RAC 2
	VENTILATION	
Supply and exhaust fans are not interlocked with range lighting.	Interlock supply and exhaust fans with range lighting.	RAC 3
More than 10 to 15% of the plenum wall is open.	Perform maintenance on the ventilation system. If adequate flow cannot be achieved, the plenum wall may need to be retrofitted so that the holes in the plenum wall are one inch in diameter and extended over the entire surface of the plenum wall.	RAC 3
Smoke tests revealed some turbulence at the firing line observable in lanes three and four	Correct ventilation system deficiencies to provide a uniform and even flow rate.	RAC 2
	AIR SAMPLING	
Air sampling was conducted in all lanes	Air sampling indicates that the range may be classified as safe.	NO RAC

SUBJECT: Industrial Hygiene Survey of the Huntington Indoor Firing Range Survey performed 20 March 2002 at the Huntington Army National Guard Armory in Huntington, West Virginia.

BACKGROUND:

Introduction. At the request of Mrs. Non-Responsive of the National Guard Bureau Region North Industrial Hygiene Office, an industrial hygiene survey was performed at the Huntington Indoor Firing Range at the Huntington Army National Guard Armory in Huntington West Virginia. Non-Responsive contract industrial hygienist, Environmental Management Solutions conducted the survey on 20 March 2002. The purpose of the survey was to perform a comprehensive industrial hygiene survey to evaluate range characteristics, ventilation, and quantify employee exposure to lead and beryllium.

Site Description. The Huntington Indoor Firing Range is used on a limited use status for weapons firing and qualification. Civilian shooters do not use this firing range. The range has five lanes and a mechanical ventilation system with a plenum that extends the entire width of the survey. The range has not been cleaned in some time and the range officer and custodian are currently deployed. The range was found with spent ammunition throughout the range.

Scope of Work. The Indoor Firing Range was visually examined and personnel were consulted to accurately assess potential hazards present. A range inspection checklist found in National Guard Regulation 385-15, which addresses Indoor Firing Range use and maintenance, was completed for the range. Personnel were present to answer questions pertaining to operation and maintenance of the range as best they could with the range officer and custodian being deployed. Lighting and range measurements were taken. Smoke candles were utilized to observe airflow patterns in the range. Ventilation studies and air sampling was performed to quantify performance of the range and its effectiveness in reducing employee exposure to lead and beryllium. Reference information, Instrumentation, Methodology, and Assessment Criteria can be found in Appendix A.

Health Effects and Hazard Determination. The most significant hazard present to employees and users of the indoor firing range is lead dust. Shooters using ammunition with lead primers or bullets manufactured with lead are exposed to lead fumes and dust during the firing process. Furthermore, the lead found in the primer, the melting of the bullet base by hot powder gasses, the shaving and abrasion of the bullet during firing, and fragmentation of the bullet at the point of impact are all potential sources for lead. Further exposure to lead may occur during cleaning of the range, guns, or bullet trap where lead dust is deposited.

Lead affects the nervous, circulatory, digestive, excretory, and reproductive systems of both men and women. Lead can build up in the body affecting the blood, heart, and immune systems, if the amount absorbed and stored in the body exceeds the body's ability to expel it. In children, slowed cognitive development and reduced growth are results of overexposure. Pregnant women overexposed to lead are more prone to spontaneous abortions or may give birth to babies with a low birth weight and slowed postnatal neurological development.

Beryllium during short-term exposure may cause irritation of respiratory tract irritation, and chemical pneumonitis (lung inflammation). Long-term exposure can result in skin sensitization, and chronic beryllium disease, which includes cough, weight loss, and weakness. Beryllium is also classified as a potential occupation carcinogen, meaning that it has cancer-causing potential.

FINDINGS, DISCUSSION, AND RECOMMENDATIONS

a. Building Envelope. Pipes in the range are not adequately baffled and are exposed in some areas of the range. The survey was performed on a particularly rainy day and water was seeping into the range. Ceiling mounted target mounts were attached to the ceiling. The entrance door from the outside is adequately weather-stripped, however, the inner door is not.

Recommendations.

1. Pipes, conduits, and other projecting surfaces should be baffled or covered by a protective material to prevent ricochets. [ALL STATES LOG NUMBER P01-0075 1-17a(1)(b)] **(RAC 2)**
2. Weather-strip all access doors to the range to prevent leakage of lead dust and debris into outlying areas. [DG-415-1, App. A, 3-1f(4)] **(RAC 2)**
3. **The building envelope is unsafe due to inadequate baffling. All deficiencies should be corrected before firing.**

b. Range Lighting. Range lighting is relatively uniform but does cause some shadows down range. Lighting measures an average of 87 foot-candles (FC). At least two bulbs are burned out at the target line. Lighting averages 33 FC in the area downrange of the firing line. Lighting averages 32.6 FC at the firing line and 45 behind the firing line. Baffles adequately protect all downrange lighting. No exit lighting is provided for the range. The lighting behind the bullet trap was burned out and could not be replaced for the survey.

Recommendations.

1. Lighting is required to be 100 FC at the target line. Replace burned out bulbs to bring lighting to appropriate levels at the target line. [ALL STATES LOG NUMBER P01-0075 1-17e(1)(b)] **(RAC 3)**
2. Lighting behind the bullet trap should be upgraded to 30 FC to allow personnel to appropriately see during maintenance procedures. [ALL STATES LOG NUMBER P01-0075, 1-17e(1)(g)] **(RAC 3)**
3. **The range is classified as unsafe due to deficiencies found concerning range lighting.**

c. *Bullet Traps.* An inclined plate bullet trap is permanently installed and is designed for .22-caliber use. .22 caliber, .357 caliber, .38 caliber, .45 caliber, 9 mm. The bullet trap measures ¼ " thick and adequately prevents ricochets. The bullet trap is in good shape and is smooth without any seams or

overlapping. Bullet collection bins were full and overflowing. The range has reportedly not been cleaned since it was opened in 1996.

Recommendations.

1. The bullet trap should be adequately maintained. Rust or paint chips may cause ricochets. A thin coating of oil should be applied every 3 months for moderate firing, sooner if heavy firing occurs (10W30 or 3 in 1). **DO NOT APPLY GREASE. (RAC 3)**
2. Bullet collection bins should not be allowed to get over ¾ full. Contact the WV ARNG State Environmental Office prior to emptying for disposal instructions. **(RAC 3)**

d. ***Targets and Target Carriers.*** Target retrieval systems were provided for each lane and are in good working order. Cardboard targets with wooden stakes were used along with paper targets are used by personnel during firing.

Recommendations.

1. Only paper targets should be used in the range [ALL STATES LOG NUMBER P01-0075, 1-17e(1)(b)] **(RAC 4)**

e. ***Range Use.*** The range is used by National Guard personnel only for qualification and make up testing. It is also used for storage of small items. Ladders were found stored in the plenum and chairs, a gate, Christmas tree, and other items were found stored in the bullet trap area. All items were removed before firing. Shotgun shells were found downrange, that may indicate that unauthorized firers have used pellet type ammunition. An ABC type fire extinguisher was located outside of the door.

Recommendations.

1. No items should be stored in the firing range at any time. Stored items can become contaminated with lead dust and will increase the risk of exposure to anyone who moves or touches stored items. Move table and other small necessities to small hallway outside of the range, or in an appropriate storage area. [ALL STATES LOG NUMBER P01-0075 1-17d] **(RAC 2)**
2. No items should be stored in front of the plenum wall, which will disturb airflow while the ventilation system is in operation. [ALL STATES LOG NUMBER P01-0075 1-19c] **(RAC 2)**
3. Pellets, BBS, magnum, and armor piercing rounds should not be used in this range under any circumstances. The range should be restricted

to unauthorized firers. [ALL STATES LOG NUMBER P01-0075, 1-19g] (RAC 3)

f. ***Range Maintenance.*** Dry sweeping does not occur in the range and no brooms were found stored in the range. The appointed range custodian and officer have both been deployed and neither has been replaced since that time. At this time, no custodian has been assigned to the range.

Recommendations.

1. A range custodian must be appointed who is fully trained and aware of the responsibilities of cleaning the range. [ALL STATES LOG NUMBER P01-0075 1-13c] (RAC 2)
2. The indoor firing range should be cleaned with the ventilation system operating to prevent dust and debris from entering the worker's breathing zone. Floor areas from behind the firers to the firing line and 15 feet downrange should be cleaned at the end of each firing day. [NIOSH 76-130, p.24, II, 1] (RAC 2)

g. ***Personal Protective Equipment (PPE).*** Shooters brought in safety goggles and glasses during firing.

Recommendations.

1. Provide hearing and eye protection for use by firers in the vicinity of the entrance door. [ALL STATES LOG NUMBER P01-0075 1-20 a, b] (RAC 4)

h. **Posting of Signs.** All appropriate warning signs are posted in the range and on the main entrance door to the range. Most signs are computer generated. An illuminated warning sign to alert personnel while range is in use is not present and visible at the outside door. Firing lanes are numbered both at the firing line and at the target line. No signs are posted outside of the access door to the bullet trap, warning personnel not to enter during range operation.

Recommendations.

1. An illuminated sign should be interlocked with the range ventilation switch and located outside of the firing range to alert individuals outside when the range is in use. [ALL STATES LOG NUMBER P01-0075 1-21c] (RAC 4)
2. A warning should be posted on the access door to the bullet trap, to warn personnel not to enter. [ALL STATES LOG NUMBER P01-0075 1-21e] (RAC 3)

i. **Range Standing Operation Procedure (SOP).** A Range SOP meeting all requirements is available for this facility and approved by the State Safety Office. Range users are fully briefed on the SOP and sign a range safety roster briefing before use.

Recommendations.

1. There are no recommendations for the Range Standing Operation Procedure at this time.

j. **Record Keeping.** A visitor's log was available however; it only contained spaces for the name of the shooter, their organization, and the type of ammunition used and number of rounds fired. Unauthorized users have been able to access the range and so all users are not fully briefed on standing operating procedures and signed in. Initial and previous inspection reports were available and air sampling was last conducted during a survey in May 1997. An OSHA compliance program is in place. Range officer and custodian have been deployed and an interim officer and custodian have not been assigned. Personnel must be annually trained on lead hazards specific to firing and cleaning of the range.

Recommendations.

a. A visitor's log must be maintained that contains the name and age of firer, organization, sign in and out time, and type of ammunition, and number of rounds fired. [ALL STATES LOG NUMBER P01-0075 1-14c] **(RAC 2)**

b. A copy of the visitor's log and any other inspections should be maintained. [ALL STATES LOG NUMBER P01-0075 1-24a] **(RAC 2)**

c. State maintenance officers and custodians must be fully trained on an annual basis on the health effects from exposure to lead dust and the appropriate precautions that must be taken. Records verifying this training must be kept by the range custodian. Each employee who works in a place in which there is a potential exposure to airborne lead at any level shall inform employees of the Content of Appendix A, Substance Data Sheet for Occupational Exposure to Lead, and Appendix B, Employee Standard Summary, of OSHA regulation 1910.1025. Initial training should be performed at least 180 days from date of initial job assignment and annually thereafter. [29 CFR 1910.1025(l)(1)(I-iv), 29 CFR 1910.1200(h)] **(RAC 2)**

k. **Ventilation.** The range is equipped with an operational ventilation system, with 100% of the make-up air exhausted at the bullet trap. Supply and

exhaust fans are not interlocked with range lighting. Ventilation Flow rates were at or above 50 fpm in all firing lanes except for the prone position in Lane 2. (See diagram in Appendix D for detailed measurements). Flow rates were found greater than 75 fpm at one or all of the positions in Lanes 1, 3, 4, and 5. The static pressure in the range measured -.06" wg. The recommended static pressure range is -.05 to .15" wg. The static pressure measured is appropriate for the range.

The plenum wall extends the entire width of the range and flow rates at the plenum wall did not have the required 400 to 600 fpm. More than 10-15% of the plenum wall is open. Smoke tests revealed some turbulence in lanes three and four.

Recommendations.

1. Interlock supply and exhaust fans with range lighting so that the ventilation system operates at all times during occupancy of the range. [CEHND 110-1-18, 3-4a] **(RAC 3)**
2. Results of ventilation and smoke tests indicate that adequate flow rates are being provided by the fan but are not being evenly and uniformly distributed to move lead dust downrange and away from firer's breathing zone. Perform maintenance on the ventilation system, to include belts, fans, louvers, baffles, and valves to ensure that the system is producing laminar flow with at least 50 fpm at all positions in each firing lane and puts the range under negative pressure in relationship to outer areas. **(RAC 2)**
3. The purpose of the plenum wall is to provide enough resistance to straighten the airflow and allow it to be distributed evenly and uniformly downrange. If adequate flow cannot be achieved through maintenance of the ventilation system, a retrofitting of the plenum wall may need to be accomplished to ensure that the appropriate airflow and pressure is being provided.

1. Air Sampling. Air sampling was conducted on five firers and one helper during a forty-five minute simulated qualification session. Three area samples were run. Two general area samples were placed at the plenum wall behind the firers and the third area pump was placed in the hallway outside of the entrance. Stored items were moved prior to firing. Results of air sampling indicate that the maximum hours of allowable exposure per day for guardsmen exposed less than 30 days per year is 8 hours. For guardsmen on marksmanship teams or guardsmen exposed more than 30 days per year and non-military personnel, no more than 6 hours per day on the range is permitted. For range users under 17 years old, no more than 3 hours per day are permitted.

Recommendations.

Range Status. This range has been classified as safe due to air sampling results. Deficiencies in the building envelope and ventilation system should be corrected as soon as possible.

Recommendations.

1. All corrected deficiencies should be reinspected, and approved. **(RAC 2)**
2. For technical information or assistance contact Mrs Non-Responsive at the Region North Industrial Hygiene Office, 1-800-550-6967 ext. 17.

Non-Responsive

Industrial Hygienist

APPENDIX A

REFERENCES

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**

AR 40-5, Preventative Medicine, 15 October 1990.

AR 385-10, The Army Safety Program, 23 May 1988.

DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) program)

National Guard Regulation (NGR) 385-10, Army National Guard Safety and Occupational Health Program, 29 December 1989.

National Guard Pamphlet (NG PAM) 385-16, Guidelines for Converting Firing Ranges to Other Uses, 31 January 1994.

TB MED 503, The Army Industrial Hygiene Program, February 1985.

TB MED 502, Occupational Safety and Health Respiratory Protection Program..

Title 29 Code of Federal Regulations (CFR) 1910.1025, Lead.

Decontamination and Cleaning Protocol

1. Ensure that all procedures listed below comply all federal, state, and local regulations. Consult the Regional Industrial Hygiene Office and State Environmental Office for further guidance.

2. **Ventilation System**
   i. The range ventilation system must be in operation during all cleaning activities. If no ventilation system is available all doors and windows must be kept sealed to prevent contamination of other areas.

3. **Materials**
   i. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup. If a HEPA vacuum cannot be obtained a wet method, detailed below, should be utilized. **A high-pressure water system or dry sweeping may not be used.**
   ii. A cleaning solution containing detergent and water is recommended. New solutions of detergent and water should be mixed frequently.
   iii. Two containers should be used; one for wetting the applicator (rags, sponge, mop) and the other for rinsing once the dust has been wiped from the surfaces.
   iv. Wastewater in containers can be left to evaporate. Any waste left in the buckets and applicators should be disposed of as hazardous waste. Consult the Environmental Office for appropriate disposal instructions.
   v. Personnel responsible for decontamination of the range and stored items should be provided with a full face air purifying respirator with a N100 filter or HEPA filter cartridge providing that all requirements for placing employees in respiratory protection have been met as detailed in 29 CFR 1910.134. Employees should be provided with protective coveralls with hood and shoe covers (i.e. Tyvek™ full body suit). Protective clothing should be hanged daily at the end of the shift and more frequently if the suit becomes grossly contaminated. If cotton coveralls are provided then the employer must provide for maintenance and laundering of protective clothing. Protective clothing should not be taken home and prior to leaving the work area, personnel should thoroughly HEPA vacuum clothing to prevent lead dust from leaving the area. Work and street clothing should not be stored together.

4. **Order of Cleaning**
   i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. All surface areas in the range must be cleaned. Stored items must be decontaminated prior to removal.
   ii. After removing the sand and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plates should be cleaned.
   iii. The ceiling, lights, baffles, retrieval system, heating systems, and ventilation ducts should be cleaned.
   iv. Acoustical material should be vacuumed instead of being painted over, A Toxic Characteristic Leaching Procedure (TCLP) may need to be used for

acoustical material and the like to determine if the material need to be classified as hazardous and disposed of accordingly. The Environmental Office should be contacted regarding this testing.

v. The floor should be the last surface cleaned starting at the bullet trap and ending behind the firing line. Concrete floors should be sealed with deck enamel and linoleum on tile floors should be waxed.

vi. All walls should be painted, preferably with a sealant, that will help prevent leaching of lead after covering.

vii. Following the wet cleaning of the area and after all surfaces have been allowed to dry thoroughly, a HEPA vacuum should be used on all surfaces, until no dust or residue can be seen. A through inspection to detect surface dust should be made following cleanup.

viii. The Regional Industrial Hygiene Office should be contacted for clearance sampling and to approve the range for converted use.

5. **Decontamination of stored items.**

i. All stored items must be decontaminated before removing them from the range. Stored equipment next to the bullet trap and firing line should be decontaminated first.

ii. A HEPA vacuum or wet cleaning method should be used. Every attempt should be made to clean the item before disposing as hazardous waste to reduce cost and waste.

iii. Porous items such as canvas tents or other fabrics may be laundered at companies, which specialize in industrial laundry services. Office partitions and carpeting present during firing should be considered grossly contaminated and disposed of as hazardous waste. Consult the Environmental office before removing and disposing of items.

6. **Medical Surveillance.**

i. A preplacement medical examination is required for all individuals involved with range cleanup operations.

7. **Air Monitoring.**

i. Worker breathing zone air samples must be collected during range cleanup to ensure that workers are not overexposed and to evaluate clean up procedures.

8. **Hazard Training**

i. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level of for whom the possibility of skin or eye irritation exists. This training should be provided for all personnel currently involved in rang cleanup operations at least annually.

APPENDIX B

APPENDIX B
DERIVING RISK ASSESSMENT CODES (RACs)
FOR HEALTH HAZARDS
(Ref: DOD Instruction 6055.1)

STEP 1. Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

A. Exposure Points Assessed

		Exposure Conditions			
		<CT	Occasionally - >CT Always - <STD	>CT ≤STD	>STD
AER POSSIBLE?	NO	0	3	5	7
	YES	1-2 4	6	8	

AER = Alternate exposure route, such as skin absorption, ingestion
CT = DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, \
parts per million
STD = DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit

B. Medical Effects Points Assessed

Condition	Points
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability such as metal fume fever	3-4
Permanent, nonsevere illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling, irreversible illness or death, such as asbestosis and	7-8

lung cancer

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

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

STEP 2. Using the following guides to assess points, determine the mishap probability category (MPC) for health hazards. The probability of mishap reflects the duration of exposure and the number of exposed personnel.

A. Duration of Exposure Points Assessed

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

B. Number of Exposed Personnel Points Assessed

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

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

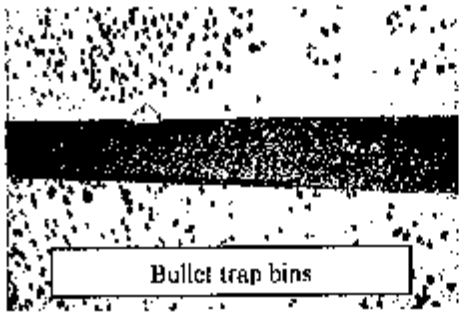
Total Points (sum of A and B, above)	MPC
14-16	A
10-13	B
5-9	C
<5	D

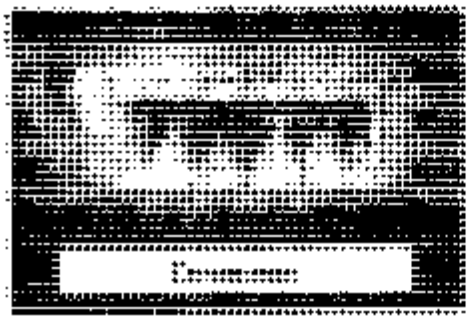
STEP 3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

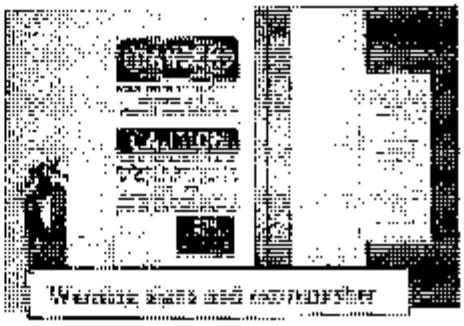
	MISHAP PROBABILITY			
	A	B	C	D
HAZARD SEVERITY				
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

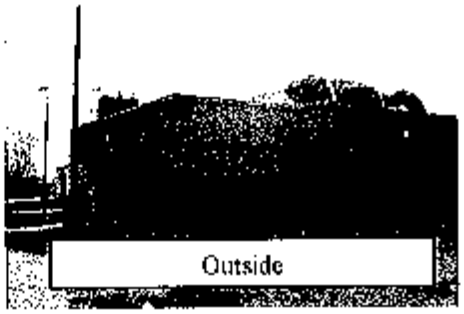
APPENDIX C

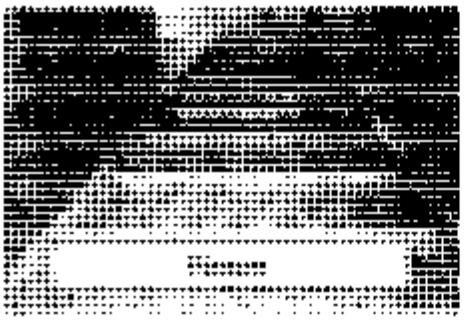
HUNTINGTON INDOOR FIRING RANGE

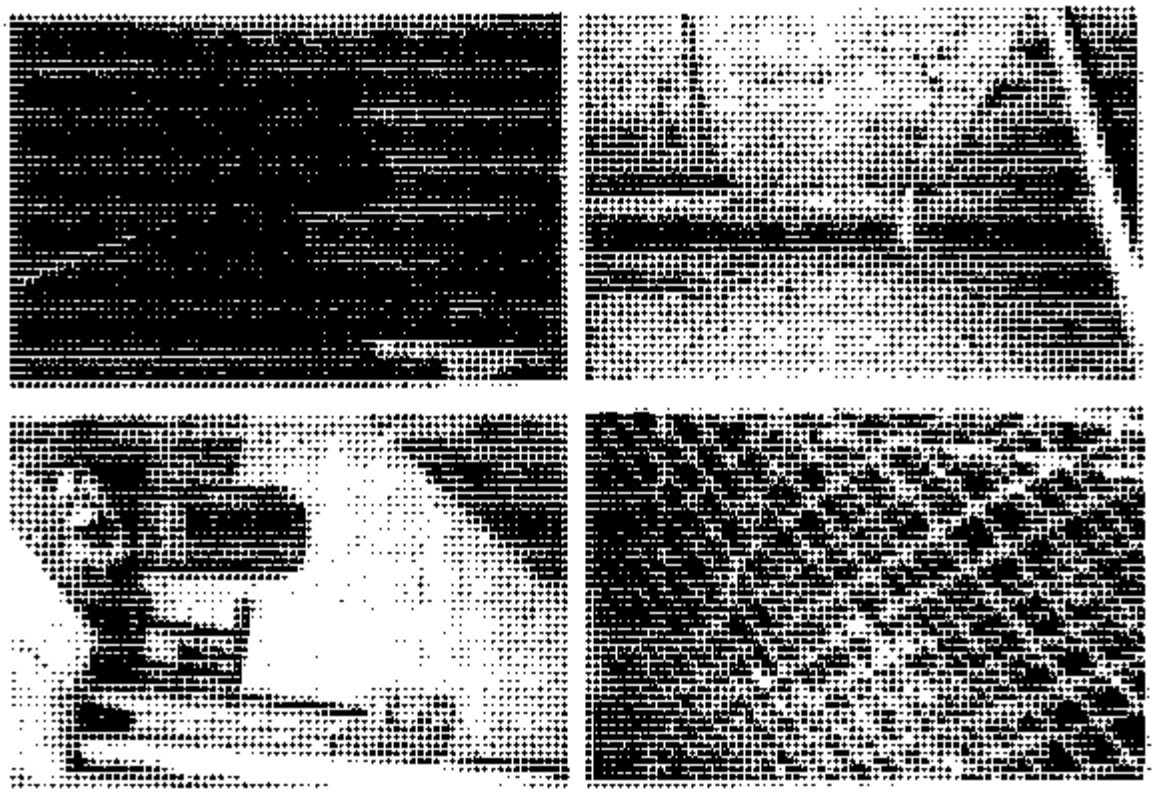




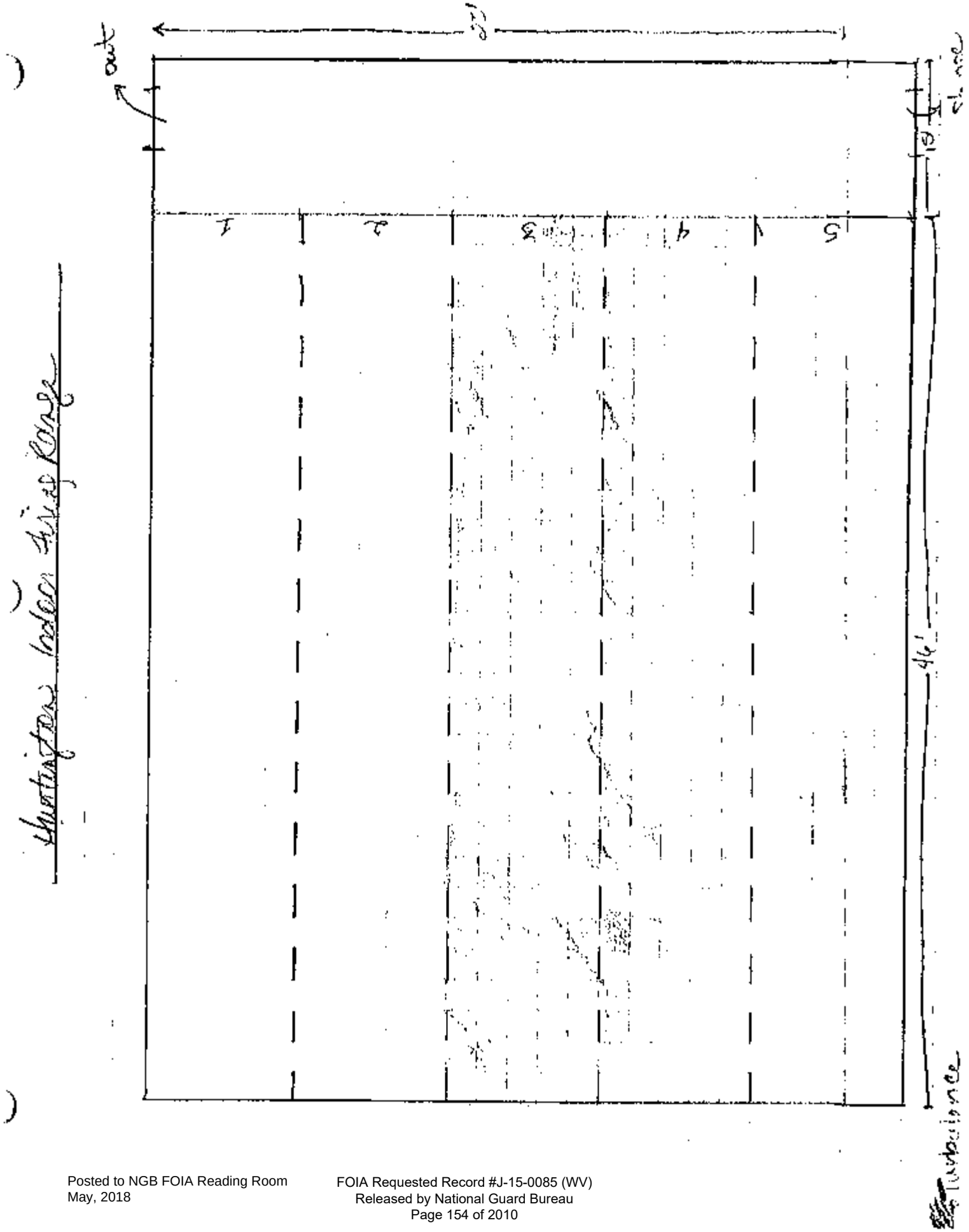








Behind the bullet trap, Huntington



APPENDIX D

Ventilation Measurements
Indoor Firing Range Lanes

	Lane 1	Lane 2	Lane 3	Lane 4	Lane 5
Standing	*85*	63	69	82	92
Kneeling	*91*	58	87	100	65
Prone	*78*	23	93	90	101
Average	*85*	48	83	91	86

APPENDIX E

Air Sampling Results
Huntington IFR

LEAD Sample Number	Personnel/Area	Lane	Air Sampling Time	Results mg/m³ [1]		Maximum Hours of Allowable Exposure Per Day Guardsmen exposed less than 30 days per year	Maximum Hours of Allowable Exposure Per Day Guardsmen exposed more than 30 days per year	Maximum Hours of Allowable Exposure Per Day Range Users Under 17 Year s of Age
HN-01	[redacted] Non-Responsive		43	Lead	<0.006	8	6	3
				Beryllium	<0.0003			
HN-02			44	Lead	0.03			
				Beryllium	<0.0003			
HN-03			47	Lead	0.005			
				Beryllium	<0.0003			
HN-04			48	Lead	0.005			
				Beryllium	<0.0003			
HN-05			46	Lead	0.03			
				Beryllium	<0.0003			
HN-06		Between 1 and 2	125	Lead	0.004			
				Beryllium	<0.0003			
HN-07		Between 4 and 5	184	Lead	<0.001			
				Beryllium	<0.0003			
HN-08			37	Lead	0.01			
				Beryllium	<0.0002			
HN-09			75	Lead	<0.003			
				Beryllium	<0.0003			
HN-B1		NA	NA	NA		NA	NA	NA

[1] Beryllium results are a time weighted average (TWA) to be compared to the Occupational Safety and Health Administration (OSHA), American Conference, of Government Industrial Hygienists (ACGIH), and the National Institute of Occupational Safety and Health (NIOSH) requirements and recommendations.

DATA CHEM LABORATORIES
A SORENSON COMPANY

Submitted To: Non-Responsive
Environmental Management Solutions
P.O. Box 6893
Douglasville, GA 30154

Reference Data:	**Metals**
Client Sample No.:	HN-01 through HN-B1
P.O. No.:	Not Available
Sample Location:	Indoor Firing Range Huntington, WV
Sample Type:	Filter
Method Reference:	7300
DCL Set ID No.:	02-S-1691
DCL Sample ID No.:	02-10403 through 02-10412
Sample Receipt Date:	4/11/2002
Preparation Date:	04/12/02
Analysis Date:	04/12/02

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL (ICP) purged spectrometer.

Results relate only to the items tested.

The results are in the enclosed data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
µg/Filter

Client #	HN-01	HN-02	HN-03	HN-04	HN-05	
DCL #	02-10403	02-10404	02-10405	02-10406	02-10407	LOD
Beryllium	ND	ND	ND	ND	ND	0.5
Lead	ND	5.	1.	1.	6.	1.

ND indicates the value is below the limit of detection (LOD)

Results
µg/Filter

Client #	HN-06	HN-07	HN-08	HN-09	HN-B1	
DCL #	02-10408	02-10409	02-10410	02-10411	02-10412	LOD
Beryllium	ND	ND	ND	ND	ND	0.5
Lead	2.	ND	2.	ND	ND	1.

ND indicates the value is below the limit of detection (LOD)

QC Results
µg/Filter

Client #		% Recovery				
DCL #	Prep Blank	LCS				LOD
Beryllium	ND	103.				0.5
Lead	ND	105.				1.

ND indicates the value is below the limit of detection (LOD)
LCS stands for laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
mg/m^3

Client #	HN-01	HN-02	HN-03	HN-04	HN-05
DCL #	02-10403	02-10404	02-10405	02-10406	02-10407
Volume (L)	176.3	176	188	192	184
Beryllium	<0.003	<0.003	<0.003	<0.003	<0.003
Lead	<0.006	0.03	0.005	0.005	0.03

Results
mg/m^3

Client #	HN-06	HN-07	HN-08	HN-09	HN-Bl
DCL #	02-10408	02-10409	02-10410	02-10411	02-10412
Volume (L)	500	736	148	300	0
Beryllium	<0.001	<0.0007	<0.003	<0.002	-
Lead	0.004	<0.001	0.01	<0.003	-

Non-Responsive [redacted]

Analyst

Non-Responsive [redacted]

Reviewer

INDUSTRIAL HYGIENE
SAMPLING RESULT NOTIFICATION SHEET

DATA REQUIRED BY THE PRIVACY ACT

AUTHORITY: Sections 133, 1071 87, 3012, 5031, and 8012, title 10, United States Code, Executive Order 9397 and AR 40 5.

PRINCIPAL PURPOSE: The Social Security Number of the individual is required to identify, record, and retrieve occupational medical surveillance records.

ROUTINE USE: The primary use of this information is to provide, plan, and coordinate occupational health medical surveillance and care.

DISCLOSURE: In the case of military personnel and Federal employees, the requested information is mandatory because of the need to document all occupational injuries and illnesses in view of future rights and benefits. If the requested information is not furnished comprehensive medical surveillance may not be possible, but AUTHORIZED CARE WILL NOT BE DENIED.

NAME:	SOCIAL SECURITY NO.:	OPERATION:	BLDG:	DIRECTORATE/COLLOCATED ACTV:
Non-Responsive	Non-Responsive	Huntington Indoor	Firing Ra	nge

Air sampling took place on 20 March 2002 to determine workplace exposure to:

SUBSTANCE	PERMISSIBLE EXPOSURE LIMIT	YOUR RESULTS	EXP CATEGORY (See Below)
1. Lead	0.050 mg/m3	0.0029 mg/m3	1
2. Beryllium	0.0005 mg/m3 (NIOSH REL)	<0.0003 mg/m3	1
3.			
4.			
5.			
6.			

EXPOSURE CATEGORY

1. Airborne levels are below permissible limits; no work changes necessary.
2. Airborne levels are close to permissible limits; additional sampling necessary; temporary use of respiratory protection during this operation.
3. Airborne levels are above permissible limits and the following actions are indicated (where feasible) to prevent overexposure:
   a. Ventilation system improvements required (general and/or local exhaust).
   b. Engineering controls required.
   c. Employee work practices need improvement.
   d. Improve housekeeping.
   e. Personal protective equipment mandatory until exposure is below permissible limits.

COMMENTS:
NIOSH REL = National Institute of Occupational Safety and Health Recommended Exposure Limit

Employee exposures are compared to the most stringent of the three published limits:

OSHA PEL, ACGIH TLV, or NIOSH REL.

Non-Responsive

ORGANIZATION: Environmental Management Solutions DATE: 29 April 2002

INDUSTRIAL HYGIENE
SAMPLING RESULT NOTIFICATION SHEET

DATA REQUIRED BY THE PRIVACY ACT

AUTHORITY: Sections 133, 1071 87, 3012, 5031, and 8012, title 10, United States Code, Executive Order 9397 and AR 40 5.

PRINCIPAL PURPOSE: The Social Security Number of the individual is required to identify, record, and retrieve occupational medical surveillance records.

ROUTINE USE: The primary use of this information is to provide, plan, and coordinate occupational health medical surveillance and care.

DISCLOSURE: In the case of military personnel and Federal employees, the requested information is mandatory because of the need to document all occupational injuries and illnesses in view of future rights and benefits. If the requested information is not furnished comprehensive medical surveillance may not be possible, but AUTHORIZED CARE WILL NOT BE DENIED.

NAME:	SOCIAL SECURITY NO.:	OPERATION:	BLDG:	DIRECTORATE/COLLOCATED ACTV
Non-Responsive	Non-Responsive	Huntington Indoor	Firing Range	

Air sampling took place on 20 March 2002 to determine workplace exposure to:

SUBSTANCE	PERMISSIBLE EXPOSURE LIMIT	YOUR RESULTS	EXP CATEGORY (See Below)
1. Lead	0.050 mg/m3	0.0028 mg/m3	1
2. Beryllium	0.0005 mg/m3 (NIOSH REL)		1
3.			
4.			
5.			
6.			

EXPOSURE CATEGORY

1. Airborne levels are below permissible limits; no work changes necessary.
2. Airborne levels are close to permissible limits; additional sampling necessary; temporary use of respiratory protection during this operation.
3. Airborne levels are above permissible limits and the following actions are indicated (where feasible) to prevent overexposure:
   a. Ventilation system improvements required (general and/or local exhaust).
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   c. Employee work practices need improvement.
   d. Improve housekeeping.
   e. Personal protective equipment mandatory until exposure is below permissible limits.

COMMENTS:
NIOSH REL = National Institute of Occupational Safety and Health Recommended Exposure Limit

Employee exposures are compared to the most stringent of the three published limits:

OSHA PEL, ACGIH TLV, or NIOSH REL.

SIGNATURE: Non-Responsive | Environmental Management Solutions | DATE: 29 April 2002

INDUSTRIAL HYGIENE
SAMPLING RESULT NOTIFICATION SHEET

DATA REQUIRED BY THE PRIVACY ACT

AUTHORITY: Sections 133, 1071 87, 3012, 5031, and 8012, title 10, United States Code, Executive Order 9397 and AR 40 5.

PRINCIPAL PURPOSE: The Social Security Number of the individual is required to identify, record, and retrieve occupational medical surveillance records.

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NAME:	SOCIAL SECURITY NO.:	OPERATION:	BLDG:	DIRECTORATE/COLLOCATED ACTV·
Non-Responsive	Non-Responsive	Huntington Indoor	Firing Range	

Air sampling took place on 20 March 2002 to determine workplace exposure to:

SUBSTANCE	PERMISSIBLE EXPOSURE LIMIT	YOUR RESULTS	EXP CATEGORY (See Below)
1. Lead	0.050 mg/m3	0.00077 mg/m3	1
2. Beryllium	0.0005 mg/m3 (NIOSH REL)	<0.0003 mg/m3	1
3.			
4.			
5.			
6.			

EXPOSURE CATEGORY

1. Airborne levels are below permissible limits; no work changes necessary.
2. Airborne levels are close to permissible limits; additional sampling necessary; temporary use of respiratory protection during this operation.
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   a. Ventilation system improvements required (general and/or local exhaust).
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OSHA PEL, ACGIH TLV, or NIOSH REL.

SIGNATURE: Non-Responsive

ORGANIZATION: Environmental Management Solutions DATE: 29 April 2002

INDUSTRIAL HYGIENE
SAMPLING RESULT NOTIFICATION SHEET

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NAME:	SOCIAL SECURITY NO.:	OPERATION:	BLDG:	DIRECTORATE/COLLOCATED ACTV
Non-Responsive	Non-Responsive	Huntington Indoor	Firing Range	

Air sampling took place on 20 March 2002 to determine workplace exposure to:

SUBSTANCE	PERMISSIBLE EXPOSURE LIMIT	YOUR RESULTS	EXP CATEGORY (See Below)
1. Lead	0.050 mg/m3	0.0029 mg/m3	1
2. Beryllium	0.0005 mg/m3 (NIOSH REL)	<0.0003 mg/m2	1
3.			
4.			
5.			
6.			

EXPOSURE CATEGORY

1. Airborne levels are below permissible limits; no work changes necessary.
2. Airborne levels are close to permissible limits; additional sampling necessary; temporary use of respiratory protection during this operation.
3. Airborne levels are above permissible limits and the following actions are indicated (where feasible) to prevent overexposure:
   a. Ventilation system improvements required (general and/or local exhaust).
   b. Engineering controls required.
   c. Employee work practices need improvement.
   d. Improve housekeeping.
   e. Personal protective equipment mandatory until exposure is below permissible limits.

COMMENTS:
NIOSH REL = National Institute of Occupational Safety and Health Recommended Exposure Limit

Employee exposures are compared to the most stringent of the three published limits:

OSHA PEL, ACGIH TLV, or NIOSH REL.

SIGNATURE: Non-Responsive

ORGANIZATION: Environmental Management Solutions

DATE: 29 April 2002

INDUSTRIAL HYGIENE
SAMPLING RESULT NOTIFICATION SHEET

DATA REQUIRED BY THE PRIVACY ACT

AUTHORITY: Sections 133, 1071 87, 3012, 5031, and 8012, title 10, United States Code, Executive Order 9397 and AR 40 5.

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NAME:	SOCIAL SECURITY NO.:	OPERATION:	BLDG:	DIRECTORATE/COLLOCATED ACTV
Non-Responsive	Non-Responsive	Huntington Indoor	Firing Range	

Air sampling took place on 20 March 2002 to determine workplace exposure to:

SUBSTANCE	PERMISSIBLE EXPOSURE LIMIT	YOUR RESULTS	EXP CATEGORY (See Below)
1. Lead	0.050 mg/m3	0.00054 mg/m3	1
2. Beryllium	0.0005 mg/m3 (NIOSH REL)	<0.0003 mg/m3	1
3.			
4.			
5.			
6.			

EXPOSURE CATEGORY

1. Airborne levels are below permissible limits; no work changes necessary.
2. Airborne levels are close to permissible limits; additional sampling necessary; temporary use of respiratory protection during this operation.
3. Airborne levels are above permissible limits and the following actions are indicated (where feasible) to prevent overexposure:
   a. Ventilation system improvements required (general and/or local exhaust).
   b. Engineering controls required.
   c. Employee work practices need improvement.
   d. Improve housekeeping.
   e. Personal protective equipment mandatory until exposure is below permissible limits.

COMMENTS:
NIOSH REL = National Institute of Occupational Safety and Health Recommended Exposure Limit

Employee exposures are compared to the most stringent of the three published limits:

OSHA PEL, ACGIH TLV, or NIOSH REL.

SIGNATURE: Non-Resporisive

ORGANIZATION: Environmental Management Solutions DATE: 29 April 2002

INDUSTRIAL HYGIENE
SAMPLING RESULT NOTIFICATION SHEET

DATA REQUIRED BY THE PRIVACY ACT

AUTHORITY: Sections 133, 1071 87, 3012, 5031, and 8012, title 10, United States Code, Executive Order 9397 and AR 40 5.

PRINCIPAL PURPOSE: The Social Security Number of the individual is required to identify, record, and retrieve occupational medical surveillance records.

ROUTINE USE: The primary use of this information is to provide, plan, and coordinate occupational health medical surveillance and care.

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NAME:	SOCIAL SECURITY NO.:	OPERATION:	BLDG:	DIRECTORATE/COLLOCATED ACTV:
Non-Responsive	Non-Responsive	Huntington Indoor	Firing Ra	nge

Air sampling took place on 20 March 2002 to determine workplace exposure to:

SUBSTANCE	PERMISSIBLE EXPOSURE LIMIT	YOUR RESULTS	EXP CATEGORY (See Below)
1. Lead	0.050 mg/m3	0.0005 mg/m3	1
2. Beryllium	0.0005 mg/m3 (NIOSH REL)	<0.0003 mg/m3	1
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EXPOSURE CATEGORY

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   c. Employee work practices need improvement.
   d. Improve housekeeping.
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COMMENTS:
NIOSH REL = National Institute of Occupational Safety and Health Recommended Exposure Limit
Employee exposures are compared to the most stringent of the three published limits:
OSHA PEL, ACGIH TLV, or NIOSH REL.

Non-Responsive

ORGANIZATION: Environmental Management Solutions DATE: 29 April 2002

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-ARS-IHNE 21 June 2007

MEMORANDUM THRU WVARNG, Medical Command, ATTN: LTC Non-Responsive Non- 1740 Coonskin Drive, Charleston, WV 25311-1085

FOR WVARNG, Kenova Indoor Firing Range, ATTN: MAJ Non-Responsive 1740 Coonskin Drive, Charleston, WV 25311

SUBJECT: Annual Survey – Kenova Indoor Firing Range

1. I have enclosed the industrial hygiene survey report and the supporting documents completed by USACHPPM-N.

2. Please contact me at (410) 942-0273 if you have any questions regarding the enclosed report.

Non-Responsive
Regional Industrial Hygienist

2 Encls
1. Survey Report
2. CD

CF:
COL Non-Responsive ncl 2)
CPT (Encl 2)

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f) 30 June 2007

MEMORANDUM FOR West Virginia Army National Guard Occupational Health Manager (OHM), ATTN: LTC Non-Responsive 1740 Coonskin Drive, Charleston, WV 25311

SUBJECT: Kenova Indoor Firing Range (IFR) Evaluation, West Virginia Army National Guard (WVARNG).

1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Army National Guard Indoor Firing Ranges, 3 November 2006.

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

2. PURPOSE. The purpose of the survey was to evaluate the operating conditions of the Kenova indoor firing range for the West Virginia Army National Guard.

3. GENERAL.

a. Survey Personnel. This survey was conducted 21 March 2007 by Ms. Non-Responsive Regional Industrial Hygienist, from the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, Havre de Grace, Maryland and Ms. Non-Responsive Industrial Hygienist, from the United States Army Center for Health Promotion and Preventive Medicine North (USACHPPM–N), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix A of this report.

c. Background. LTC Non-Responsive requested an evaluation through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office of the operating condition of the Kenova indoor firing range serving the West Virginia Army National Guard. Kenova is a newer range opening in approximately 1996.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a). NGR 385-15 and NG Pam 420-15 prescribe the policy and responsibilities for inspection, evaluation, operation, rehabilitation, and conversion of Army National Guard (ARNG) indoor firing ranges.

b. Calibration. A portable hot wire anemometer was used to measure ventilation rates. This instrument was calibrated utilizing National Institute of Standards and Testing (NIST)-traceable methods and manufacturer's instructions.

c. Methodology. The survey consisted of a visual inspection, collection of ventilation measurements, and observation of air movement patterns.

5. FINDINGS AND DISCUSSION.

a. Annual Safety Inspection. Records of an annual safety inspection of the active range were not available during this survey. An annual safety inspection using the checklist in NGR 385-15, Appendix F is required on an active range (reference 1b, 1-15 a, and 4-3 a). Once the range successfully passes the safety inspection, an IH Evaluation should then be requested from the NGB Region North IH Office (reference 1b, Figure 2-1).

b. Ventilation Requirements.

(1) Upon activation of the ventilation system, it was observed that the range was under positive pressure. Exit doors remained open as air escaped. Range exhaust ventilation should exceed supply ventilation by approximately 10% so that

the range is under slight negative pressure (reference 1b, 2-2 b(1)(f) and (h)). The exhaust fan was determined to be inoperable.

(2) Further examination of the roof mounted fans revealed that two of the three louver panels were painted over making them non-functional. The unit also had a broken drive belt. Indoor firing ranges are required to have an operational mechanical ventilation system (reference 1b, 2-2 b(1)(a)). The ventilation system must be reliable to protect the health of personnel using and/or cleaning the range.

c. Range Use. Extra paper targets, cardboard, tables, and chairs were present in the range. Furniture must not be stored in the range, plenum area or behind the bullet trap (reference 1b, 2-3 d). Prior to moving contaminated furniture from the range, it must be decontaminated using the guidance in NG Pam 420-15, paragraph 3-2 (reference 1c, 3-3).

d. Prohibitions. Broom marks in debris piles inside the range suggest personal are dry sweeping inside the range. It also appears from the location of debris piles that personal were walking past the firing line to sweep. Dry sweeping is prohibited to prevent lead dust from becoming airborne and brooms of any kind shall not be stored on the range (reference 1b, 2-4 e). Maintenance and inspection personnel are the only individuals permitted downrange to reduce exposure and the spread of lead dust contamination (reference 1b, 2-4 f).

e. Maintenance Requirements. The ventilation system for this indoor firing range has not been maintained. The minimum maintenance requirements for indoor firing ranges includes that ventilation system fans are to be inspected for the condition of the belts, differential pressure readings, louver operation, and filter condition (reference 1b, 5-3 a).

6. RECOMMENDATIONS. For all personnel, this range is classified as **UNSAFE**.

a. Inspection Requirements.

(1) Annual Safety Inspection. Conduct a safety inspection of the range using the checklist in NGR 385-15 (reference 1b, 4-3 a). (No RAC Assigned)

(2) NGB Region North IH Inspection. Notify NGB Region North personnel after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first (reference 1b, 1-12 b, c, and d). (RAC 3)

b. Ventilation Requirements. Repair and/or service the indoor firing range ventilation system so that it always functions when in use and maintains a negative pressure of between negative 0.05" w.g. and negative 0.20" w.g. (reference 1b, 2-2 b(1)(a) and (g)). (RAC 3)

c. Range Use. Remove all items stored in the range, plenum area or behind the bullet trap (reference 1b, 2-3 d). Decontaminate items using the guidance in NG Pam 420-15, paragraph 3-2 (reference 1c, 3-3). (RAC 4)

d. Prohibitions. Prohibit dry sweeping anywhere in the range and remove all brooms (reference 1b, 2-4 e). Ensure that maintenance and inspection personnel are the only individuals permitted downrange to reduce exposure and the spread of lead dust contamination (reference 1b, 2-4 f). (RAC 3)

e. Maintenance Requirements. Perform a thorough maintenance inspection every three months of the ventilation system including belts, filters, louvers, and the bullet trap (reference 1b, 5-3 a). (RAC 3)

7. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 23.

Non-Responsive
Industrial Hygienist

APPROVED BY:

Non-Responsive
NGB Regional Industrial Hygienist

APPENDIX A
DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	***Exposure Conditions***			
	< AL	**Occasionally > AL Always < OEL**	**> AL < = OEL**	**> OEL**
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	***Points***
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

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

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

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

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

b. Number of Exposed Personnel Points Assessed

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

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*IPC*
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	*ILLNESS PROBABILITY CODE*			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-ARS-IHNE

21 June 2007

MEMORANDUM THRU WVARNG, Medical Command, ATTN: LTC Non-Responsive Non-Responsive 1740 Coonskin Drive, Charleston, WV 25311-1085

FOR WVARNG, Point Pleasant Indoor Firing Range, ATTN: MAJ Non-Responsive 1740 Coonskin Drive, Charleston, WV 25311

SUBJECT: Annual Survey – Point Pleasant Indoor Firing Range

1. I have enclosed the industrial hygiene survey report and the supporting documents completed by USACHPPM-N.

2. Please contact me at (410) 942-0273 if you have any questions regarding the enclosed report.

Non-Responsive
Regional Industrial Hygienist

2 Encls
1. Survey Report
2. CD

CF:
COL Non-Responsive (Encl 2)
CPT (Encl 2)

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f) 20 June 2007

MEMORANDUM FOR West Virginia Army National Guard Occupational Health Manager (OHM), ATTN: LTC Non-Responsive 1740 Coonskin Drive, Charleston, WV 25311

SUBJECT: Point Pleasant Indoor Firing Range (IFR) Evaluation, West Virginia Army National Guard (WVARNG).

1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Army National Guard Indoor Firing Ranges, 3 November 2006.

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

2. PURPOSE. The purpose of the survey was to evaluate the operating conditions of the Point Pleasant indoor firing range for the West Virginia Army National Guard.

3. GENERAL.

a. Survey Personnel. This survey was conducted 21 March 2007 by Ms. Non-Responsive Regional Industrial Hygienist, from the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, Havre de Grace, Maryland and Ms. Non-Responsive Industrial Hygienist, from the United States Army Center for Health Promotion and Preventive Medicine North (USACHPPM-N), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix A of this report.

c. Background. LTC Non-Responsive requested an evaluation through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office of the operating condition of the Point Pleasant indoor firing range serving the West Virginia Army National Guard.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a). NGR 385-15 and NG Pam 420-15 prescribe the policy and responsibilities for inspection, evaluation, operation, rehabilitation, and conversion of Army National Guard (ARNG) indoor firing ranges.

b. Calibration. A portable hot wire anemometer was used to measure ventilation rates. This instrument was calibrated utilizing National Institute of Standards and Testing (NIST)-traceable methods and manufacturer's instructions.

c. Methodology. The survey consisted of a visual inspection and collection of ventilation measurements.

5. FINDINGS AND DISCUSSION.

a. Annual Safety Inspection. Records of an annual safety inspection of the active range were not available during this survey. An annual safety inspection using the checklist in NGR 385-15, Appendix F is required on an active range (reference 1b, 1-15 a, and 4-3 a). Once the range successfully passes the safety inspection, an IH Evaluation should then be requested from the NGB Region North IH Office (reference 1b, Figure 2-1).

b. Ventilation Requirements.

(1) Upon activation of the ventilation system, it was observed that the range was under positive pressure. Exit doors remained open as air escaped. An initial measurement indicated the range was under positive 0.14 inches water gauge (" w.g.) pressure. Range exhaust ventilation should exceed supply ventilation by

approximately 10% so that the range is under slight negative pressure (reference 1b, 2-2 b(1)(f) and (h)). The exhaust fan was determined to be inoperable.

(2) Further examination of the roof mounted fans revealed that the metal bar that opens the louvers was broken. The unit also appeared corroded and had a missing drive belt. Indoor firing ranges are required to have an operational mechanical ventilation system (reference 1b, 2-2 b(1)(a)). The ventilation system must be reliable to protect the health of personnel using and/or cleaning the range.

c. Maintenance Requirements. The ventilation system for this indoor firing range has not been maintained. The minimum maintenance requirements for indoor firing ranges includes that ventilation system fans are to be inspected for the condition of the belts, differential pressure readings, louver operation, and filter condition (reference 1b, 5-3 a).

6. RECOMMENDATIONS. For all personnel, this range is classified as **UNSAFE.**

a. Inspection Requirements.

(1) Annual Safety Inspection. Conduct a safety inspection of the range using the checklist in NGR 385-15 (reference 1b, 4-3 a). (No RAC Assigned)

(2) NGB Region North IH Inspection. Notify NGB Region North personnel after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first (reference 1b, 1-12 b, c, and d). (RAC 3)

b. Ventilation Requirements. Repair and/or service the indoor firing range ventilation system so that it always functions when in use and maintains a negative pressure of between negative 0.05" w.g. and negative 0.20" w.g. (reference 1b, 2-2 b(1)(a) and (g)). (RAC 3)

c. Maintenance Requirements. Perform a thorough maintenance inspection every three months of the ventilation system including belts, filters, louvers, and the bullet trap (reference 1b, 5-3 a). (RAC 3)

NGB-ARS-IHNE
SUBJECT: Point Pleasant Indoor Firing Range Evaluation, West Virginia Army National Guard, 21 March 2007.

7. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 23.

Non-Responsive

Industrial Hygienist

APPROVED BY:

Non-Responsive

NGB Regional Industrial Hygienist

APPENDIX A
DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	*Exposure Conditions*			
	< AL	Occasionally > AL Always < OEL	> AL < = OEL	> OEL
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	*Points*
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

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

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

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

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

b. Number of Exposed Personnel Points Assessed

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

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*IPC*
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	*ILLNESS PROBABILITY CODE*			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f) 25 March 2008

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
WHEELING, WV
5 DECEMBER 2007

1. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards at the Wheeling IFR.

2. CONCLUSIONS. Occupational health risks at the IFR were not well controlled.

3. FINDINGS AND RECOMMENDATIONS. For all personnel, this range is classified as **UNSAFE.**

a. Inspection Requirements.

(1) Annual Safety Inspection. The annual safety inspection of the range was unavailable, inspections must be done using the checklist in National Guard Regulation (NGR) 385-15 annually. **(RAC 4)**

(2) NGB Region North IH Inspection. NGB Region North personnel must be notified after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first. **(RAC 4)**

b. Exposed Gas Line. A gas pipe was installed in front of the firing line and was unprotected from any ricochets or direct shots. Install proper baffles to ensure bullets do not impact the gas line and create an explosion. **(RAC 3)**

c. Ventilation Requirements.

(1) Ventilation Shutoff/Pressure Differential. An initial measurement of the ventilation in the range indicated the range was under negative -1.1 inches water gauge (" w.g.) pressure, which is excessive. Repair and/or service the indoor firing

range ventilation system so that it always functions when in use and maintains a negative pressure between negative 0.05" w.g. and negative 0.20" w.g.. **(RAC 3)**

(2) Entrance Door Gap. During the survey it was noted that the entrance door had a gap at the bottom of approximately 1 inch. Install a door sweep at the bottom of the entrance door to the range. **(RAC 5)**

(3) Room Temperature. After the ventilation system was turned on the temperature on the range fell to 33°F. Modify the ventilation system to ensure the room temperature does not fall below 65°F. **(RAC 3)**

d. Range Lighting. Overhead lighting on the range protrudes below the ceiling. Move range lighting on top of baffles to prevent breakage and ricochets. **(RAC 4)**

e. Bullet Traps. The bullet trap was moderately pitted. Replace the bullet trap plates and ensure the weld seams along the edges of the plates are ground smooth so there are no uneven surfaces that could result in ricochet. **(RAC 4)**

f. Lead Levels. No air samples were able to be collected. Request air sampling during firing to ensure lead levels are below 0.05 mg/m^3. **(RAC 3)**

g. Plenum Blockage. Several Pieces of equipment were stored in both the range and the plenum area behind the range. Remove equipment from range and plenum area to ensure a continuous average air flow above 50 fpm at all points along the firing line. **(RAC 4)**

h. Prohibitions. Multiple brooms and dust pans were found on or near the IFR. Prohibit dry sweeping to prevent lead dust from becoming airborne and ensure brooms are discarded as hazardous waste. **(RAC 5)**

INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRIG RANGE (IFR)
WHEELING, WV
5 DECEMBER 2007

1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Regulation (NGR) 385-15, Policy and Responsibility for Inspection, Evaluation, and Operation of Army National Guard Indoor Firing Ranges, 3 November 2006.

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

2. PURPOSE. The purpose of the survey was to evaluate the operating conditions of the Wheeling Indoor Firing Range for the West Virginia Army National Guard.

3. GENERAL.

a. Survey Personnel. This survey was conducted 5 December 2007 by Mr. Non-Responsive Industrial Hygienist, and 1LT Non-R Environmental Engineer, both from the United States Army Center for Health Promotion and Preventive Medicine-North (USACHPPM–North), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined by using the RAC table from the Department of Defense Instruction (DODI) 6055.1 (Reference1a). This table is provided in Appendix A of this report.

c. Background. LTC Non-Responsive requested an evaluation through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office of the operating condition of the Wheeling indoor firing range serving the West Virginia Army National Guard.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards

applicable (Reference1a). NGR 385-15 and NG Pam 420-15 prescribe the policy and responsibilities for inspection, evaluation, operation, rehabilitation, and conversion of Army National Guard (ARNG) indoor firing ranges.

b. Calibration. All instruments were calibrated utilizing National Institute of Standards and Technology (NIST) traceable methods and manufacturers' instructions.

c. Methodology. The survey consisted of a visual inspection, collection of ventilation measurements, and observation of air movement patterns.

5. FINDINGS AND DISCUSSION.

a. Annual Safety Inspection. Records of an annual safety inspection of the active range were not available during this survey. An annual safety inspection using the checklist in NGR 385-15, Appendix F is required on an active range (Reference1b, 1-15 a, and 4-3 a). Once the range successfully passes the safety inspection, an IH Evaluation should then be requested from the NGB Region North IH Office (Reference1b, Figure 2-1).

b. Building Envelope. Gas lines were installed six feet in front of the firing line (see Appendix B, Figure B-1). All pipes, conduits and other projecting surfaces must be baffled or covered in such a way to protect those items and prevent ricochets (Reference 1b, paragraph 2-2 a.(1)(b)).

c. Ventilation Requirements.

(1) Upon activation of the ventilation system, it was immediately observed that the range was under excessive negative pressure as it was very difficult to open the exit door. An initial measurement indicated the range was under negative -1.1 inches water gauge (" w.g.) pressure with the supply running and -2.5 w.g. without the supply running. Negative pressure must not exceed negative 0.20" w.g. (Reference1b, paragraph 2-2 b(2)(g)). Extreme levels of negative pressure place additional loads onto the exhaust fans and decrease or may even prevent a safe emergency exit.

(2) After the system operated for approximately 3 minutes, the supply ventilation system stopped working while the exhaust continued. Indoor firing ranges are required to have an operational mechanical ventilation system (Reference1b, paragraph 2-2 b(1)(a)). The ventilation system must be reliable to protect the health of personnel using and/or cleaning the range.

(3) Upon inspection of the entrance door a gap in excess of 1 inch was noted (see Appendix B, Figure B-2). NGR 385-15 (Reference 1b, paragraph 2-2 b. (1)(m)) states that gaps greater than ½ inch must be sealed.

(4) When the ventilation system was activated the temperature in the range dropped to 33.4°F. In accordance with (IAW) NGR 385-15 (Reference 1b, paragraph 2-2 b. (1)(n)) the temperature on the range should be between 65°F and 80°F.

d. Range Lighting. Overhead lighting on the range protrudes below the ceiling (see Figure B-3, Appendix c). Range lighting must be protected by baffles to prevent breakage and ricochets (Reference1b, paragraph 2-2 a(1)(b) and c(2)(c)).

e. Bullet Traps. The bullet trap was moderately pitted, and the weld seams along the edges of the plates were not ground smooth (see Appendix B, Figure B-4) (Reference1b, paragraph 2-2 d(2)(b)). There should be no uneven surfaces that could result in ricochet.

f. Target Carriers. During the survey, all of the target carriers were placed backwards on the firing line (see Appendix B, Figure B-5). Being placed in the manner presents a possible ricochet hazard. It was noted that bullet had previously struck the target carriers placed in this manner (see Appendix B, Figure B-6). NGR 385-15 states that a target retrieval system is constructed in such a manner as to minimize flat surfaces exposed to the firing line (Reference1b, paragraph 2-2 e(1)(a)). Placing the target carriers backwards increases the change of a ricochet.

g. Lead Levels. According to NGR 385-15 a range is considered SAFE when all air samples are below 0.05 milligrams per cubic meter (mg/m^3). No air samples were collected because no live fire occurred. Since no samples were able to be collected the range shall be classified as **UNSAFE** until air samples can be obtained. (Reference1b, paragraph 2-2 f(2)(b)).

h. Equipment Storage. Several Pieces of equipment were stored in both the range and the plenum area behind the range. Indoor Firing Ranges shall not be used for any purpose other than firing and equipment shall not be stored or maintained in the range, plenum area or behind the bullet trap IAW NGR 385-15 (Reference1b, paragraph 2-3 a and paragraph 2-3 d).

g. Prohibitions. Multiple hand brooms were observed in the entrance/storage area to the range as well as the range itself (see Appendix B, Figures B-7 and B-8). Dry sweeping is prohibited to prevent lead dust from becoming airborne and

brooms of any kind shall not be stored on the range (Reference1b, paragraph 2-4 e).

6. RECOMMENDATIONS. For all personnel, this range is classified as **UNSAFE.**

a. Inspection Requirements.

(1) Annual Safety Inspection. Conduct annual safety inspection of the range, using the checklist in NGR 385-15 (Reference1b, paragraph 4-3 a). **(RAC 5)**

(2) NGB Region North IH Inspection. Notify NGB Region North personnel after the safety inspection is completed so that they may perform inspections of the ventilation system and exposure monitoring every two years or after 480 hours of use, whichever comes first (Reference1b, paragraph 1-12 b, c, and d). **(RAC 4)**

b. Exposed Gas Line. Install proper baffles to ensure bullets do not impact the gas line and create an explosion (Reference1b, paragraph 2-2 a(1)(b). **(RAC 3)**

c. Ventilation Requirements.

(1) Ventilation Shutoff/Pressure Differential. Repair and/or service the indoor firing range ventilation system so that it always functions when in use and maintains a negative pressure of between negative 0.05" w.g. and negative 0.20" w.g. (Reference1b, paragraph 2-2 b(1)(a) and (g)). **(RAC 3)**

(2) Entrance Door Gap. Seal the gap located under the entrance door to the range (Reference1b, paragraph 2-2 b(1)(m)). **(RAC 5)**

(3) Room Temperature. Modify the ventilation system to ensure the room temperature does not fall below 65°F (Reference1b, paragraph 2-2 b(1)(n). **(RAC 3)**

d. Range Lighting. Move range lighting on top of baffles to prevent breakage and ricochets (Reference1b, paragraph 2-2 a(1)(b) and c(2)(c)). **(RAC 4)**

e. Bullet Traps. Replace the bullet trap plates and ensure the weld seams along the edges of the plates are ground smooth so there are no uneven surfaces that could result in ricochet (Reference1b, paragraph 2-2 d(2)(b)). **(RAC 4)**

f. Lead Levels. Request air sampling during firing to ensure lead levels are below 0.05 mg/m^3 (References 1b, paragraph 2-4 c). **(RAC 3)**

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range (IFR), Wheeling, WV, 5 December 2007

g. Plenum Blockage. Remove equipment from range and plenum area to ensure continues air flow above 50 fpm at all points along the range (Reference1b, paragraph 1b, 2-3 a) and 1b, 2-3 c). **(RAC 4)**

h. Prohibitions. Prohibit dry sweeping to prevent lead dust from becoming airborne and ensure brooms are discarded as hazardous waste. (Reference1b, paragraph 2-4 e). **(RAC 5)**

7. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 3.

Non-Responsive

1LT, MS
Environmental Engineer

APPROVED BY:

Non-Responsive

NGB Regional Industrial Hygienist

APPENDIX A
DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	***Exposure Conditions***			
	< AL	**Occasionally > AL Always < OEL**	**> AL < = OEL**	**> OEL**
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	***Points***
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

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

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

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

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

b. Number of Exposed Personnel Points Assessed

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

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	IPC
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	ILLNESS PROBABILITY CODE			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

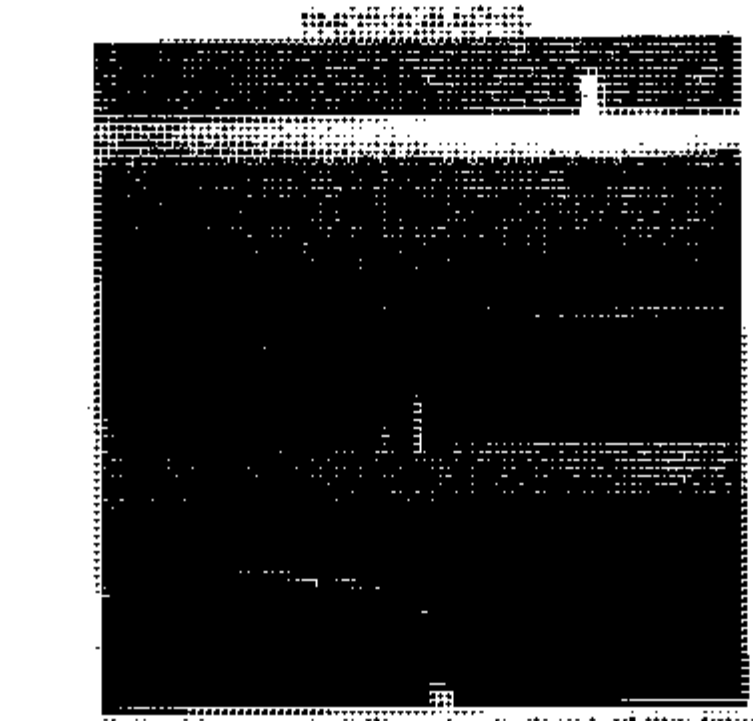
From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (Reference1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range (IFR), Wheeling, WV, 5 December 2007

APPENDIX B



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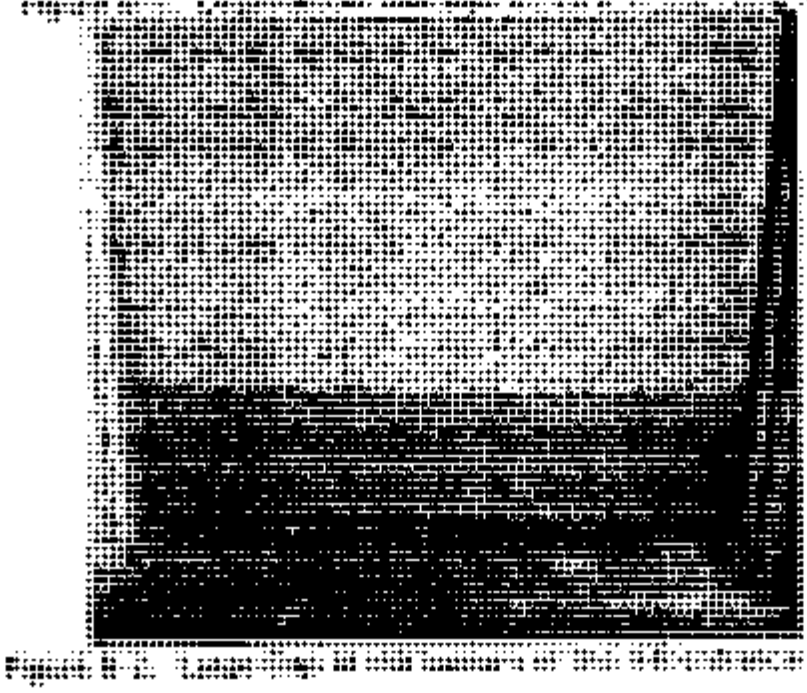

door.

Figure B-3. Exposed lighting downrange of the firing line.

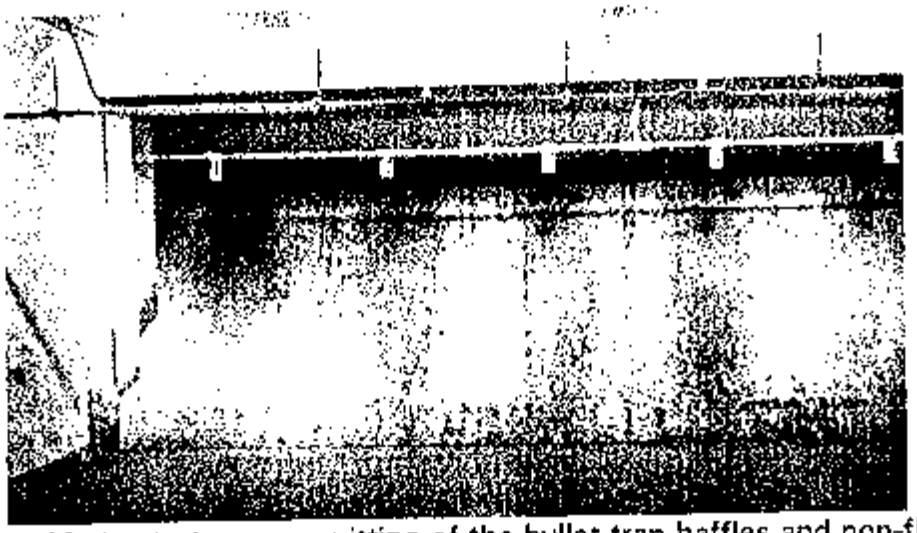

Figure B-4. Moderate to severe pitting of the bullet trap baffles and non-flush weld seams along plates.

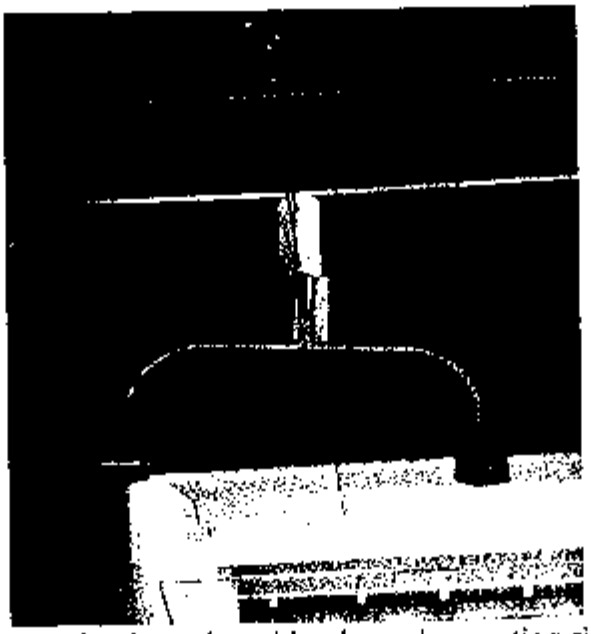

Figure B-5. Target Carriers placed backwards creating ricochet hazard.

Figure B-6. Target Holder the has been impacted by bullets and caused ricochets.

Figure B-7. Brooms stored in entrance to the IFR.

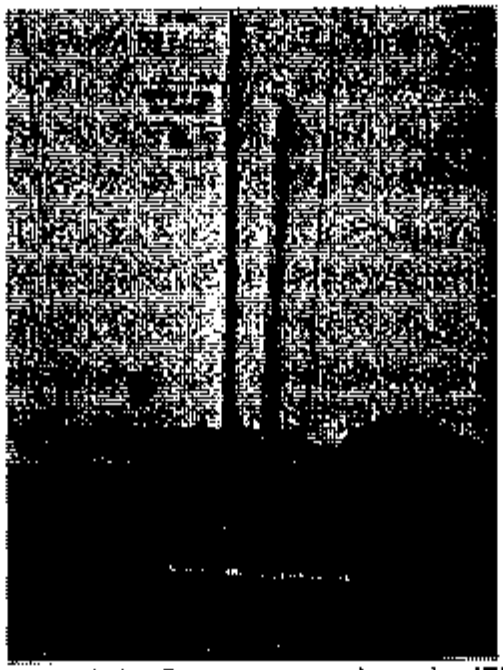

Figure B-8. Brooms stored on the IFR

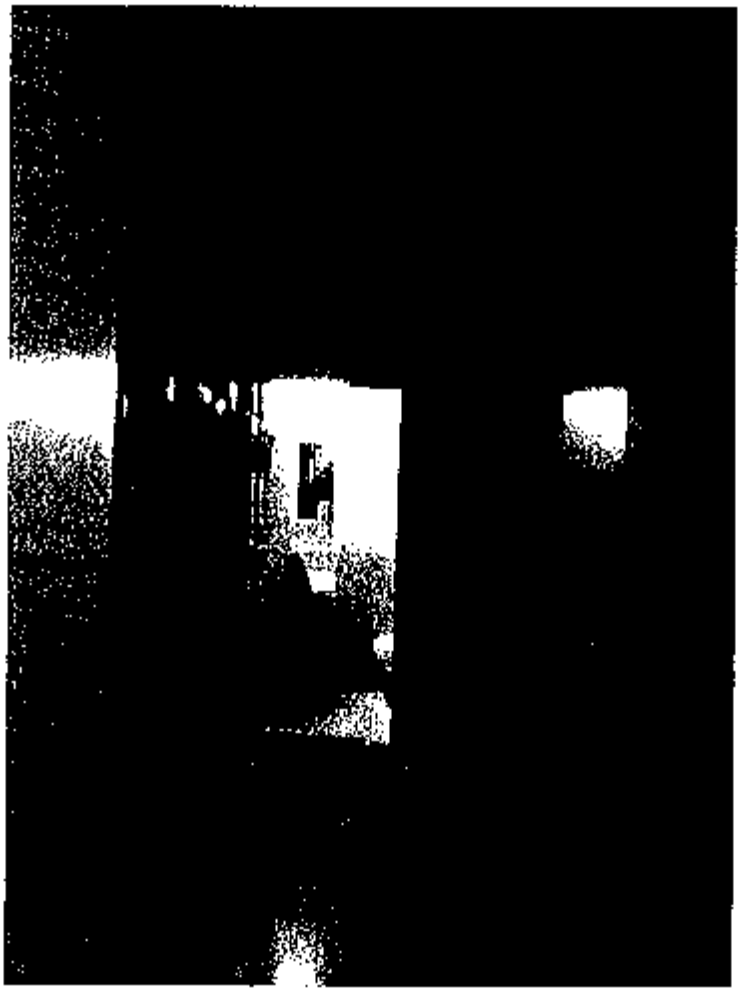

Figure B-9. Entrance to the IFR and restroom.

Prepared for:

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




Industrial Hygiene Survey
for WVARNG – Biggs Readiness Center
2194 Booth Drive
Kenova, West Virginia 25330

AECOM
December 2012
Document No.: 60275401/Biggs Readiness Center

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

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for WVARNG – Biggs Readiness Center
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Non-Responsive
Northeast District Health & Safety Manager

AECOM Environment
December 2012
Document No.: 60275401/Biggs Readiness Center

AECOM

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Executive Summary

On October 16, 2012, AECOM Technical Services Northeast, Inc. (AECOM) conducted an Industrial Hygiene (IH) survey of the Biggs Readiness Center facility located at 2194 Booth Drive in Kenova, West Virginia. Non-[redacted] was the point of contact for the facility and the Maintenance Repairman (MR2) accompanied AECOM during the survey to provide access and information concerning the Biggs Readiness Center operations.

The industrial hygiene survey was conducted in general accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Biggs Readiness Center is currently staffed by 40 personnel. The facility is configured as administrative areas and a drill hall. The facility has a range in a separate building that was closed several years ago, but no remedial activities have been undertaken since the range closure. The range building is located approximately 200 feet to the northwest of the main facility.

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

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

The Biggs Readiness Center is housed in a single story masonry building, slab on grade, constructed in 1996.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

All of the wipe samples collected in association with the range indicated lead levels above the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the U.S. Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 micrograms per square foot (ug/ft^2) for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

No damaged suspect asbestos containing materials were observed during the evaluation.

No peeling paint was observed during the evaluation.

No visible evidence of water intrusion or suspected mold growth was observed during the evaluation.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of rooftop air handling units that provide fresh air to occupied spaces.

1.0 Facility Description and Operations

The Biggs Readiness Center is located in a single story masonry building constructed in 1996. The drill hall is at the center of the facility surrounded by administrative spaces on the east, north and west sides. There is a range building located on the northwest side of the facility. Interior finishes are typically comprised of painted block walls, drywall; acoustical drop ceilings, and floor tile.

The primary activity at the Biggs Readiness Center is routine administrative duties. The Biggs Readiness Center is currently staffed by approximately 40 personnel.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall, range, and administrative areas, following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost Wipes.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
BG-01	Drill Hall Floor - West	<110 ug/ft^2
BG-02	Drill Hall Floor – East	<110 ug/ft^2
BG-03	Drill Hall – Top of Storage Box	<110 ug/ft^2
BG-04	Office B158 Supply Grille	140 ug/ft^2
BG-05	Office B211 - Table	<110 ug/ft^2
BG-06	Office A107 – Top of Cabinet	<110 ug/ft^2
BG-07	Corridor – Floor	<110 ug/ft^2
BG-08	B208 Break Room - Supply Grille	<110 ug/ft^2
BG-09	Kitchen – Top of Oven	<110 ug/ft^2
BG-10	Closed Firing Range – Exhaust Duct	27,000 ug/ft^2
BG-11	Closed Firing Range – Bullet Trap	31,000,000 ug/ft^2
BG-12	Closed Firing Range – Light Fixture	190,000 ug/ft^2
BG-13	Closed Firing Range – Overhead Heater	30,000 ug/ft^2
BG-14	Closed Firing Range – Table	6,200 ug/ft^2
BG-15	Closed Firing Range – Floor	170,000 ug/ft^2
BG-16	Outside Range - Sidewalk	3,800 ug/ft^2

ug/ft^2 = Micrograms per square foot.

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

Lead in excess of the action level of 200 micrograms per square foot (ug/ft^2) per NG-PAM 420-15 was detected in all wipe samples collected in association with the range. The firing range is located in a separate building and has been closed for several years. The range was never remediated and it is unknown at this time what the future use will be. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. No peeling paint was observed during the survey.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos-containing materials (ACM) in readily accessible areas of the Biggs Readiness Center during this survey.

Typical miscellaneous building materials observed but not sampled include floor tiles and associated mastic, drywall, fiberglass pipe insulation, cove base and associated mastic, and ceiling tiles.

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion or suspected mold growth in the Biggs Readiness Center during this survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section contains general office space. The administration section is generally utilized by all of the Biggs Readiness Center staff members. No Indoor Air Quality concerns were noted by the Biggs Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. All readings were within acceptable guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Outside - Baseline	0.7	396	64.1	37.9
Office B158	1.9	600	72.3	43.2
Office B211	1.4	490	72.8	42.1
Break Room B208	1.4	492	73.1	41.6
Drill Hall	1.6	485	71.4	35.7
Office A134	1.0	469	70.1	44.1
Office A109	1.0	452	69.6	42.6

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

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

No potential for contamination of clean air sources was observed at the facility

AECOM did not observe any obvious indications of maintenance issues with the general ventilation system from readily accessible areas. Percentage of outside air supplied by the HVAC system was calculated using CO_2 levels, and was determined to be approximately 22%, using the ASHRAE formula $\%OA=((C_{RA}-C_{SA})/(C_{RA}-C_{OA}))X100$, where C_{RA}=493 ppm CO_2, C_{SA}=482 ppm CO_2, and C_{OA}=444 ppm CO_2. Based on the carbon dioxide levels observed inside the building during this assessment, there is appears to be a sufficient quantity of outside air being delivered via the HVAC system in order to satisfy the occupant load.

A small amount of dust was observed at diffusers. Site personnel indicated that the system seems to work well. Temperature readings were constant in all areas occupied by readiness center personnel.

4.1.2 HVAC Maintenance

HVAC maintenance is reportedly performed by a contractor on external contract quarterly as needed.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in all areas. Additional lighting levels not listed in the table below are indicated on floor plan diagram in Appendix A.

Table 5-1: Light Survey

Location	Results (Foot candles)	Met Standard (Y/N)	Standard*
Office B158	82.5	Y	50
Office B211	76.5	Y	50
Break Room B208	70.0	Y	10
Drill Hall	45-78	Y	30
Office A134	169.3	Y	50
Office A109	145	Y	50
Supply	37.2-55.9	Y	30
Corridor	20-100	Y	5
Kitchen	56-105	Y	50
North Office suite	71-152	Y	50
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI/IESNA RP-7-01)			

6.0 Evaluation of Attached Garage

There is no garage associated with the Biggs Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Biggs Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

No damaged suspect asbestos containing materials were observed during the evaluation.

No peeling paint was observed during the evaluation.

No visible evidence of water intrusion or suspected mold growth was observed during the evaluation.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of rooftop air handling units that provide fresh air to occupied spaces.

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

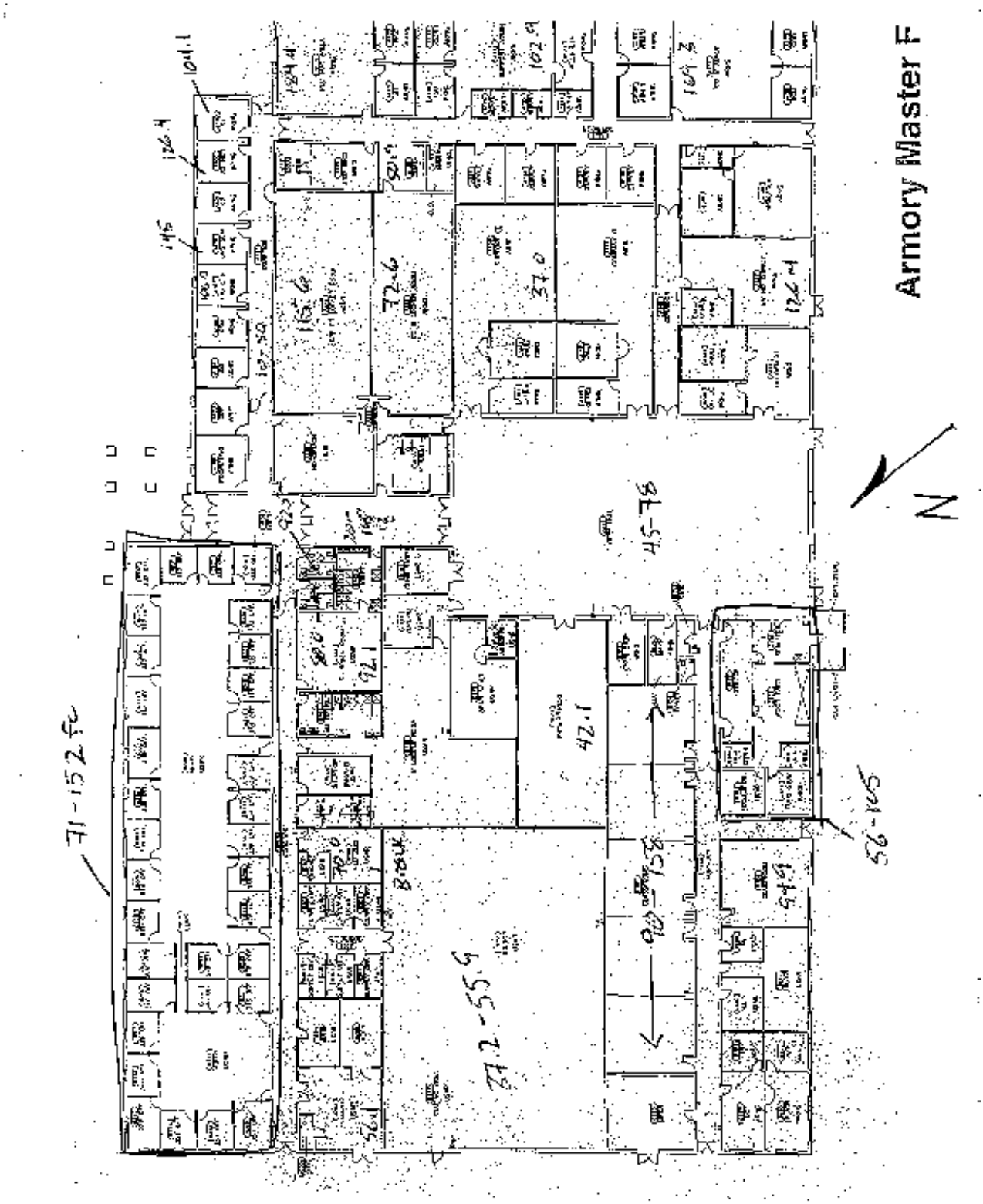
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

Appendix A

Biggs Readiness Center Facility Layout

AECOM



Appendix B

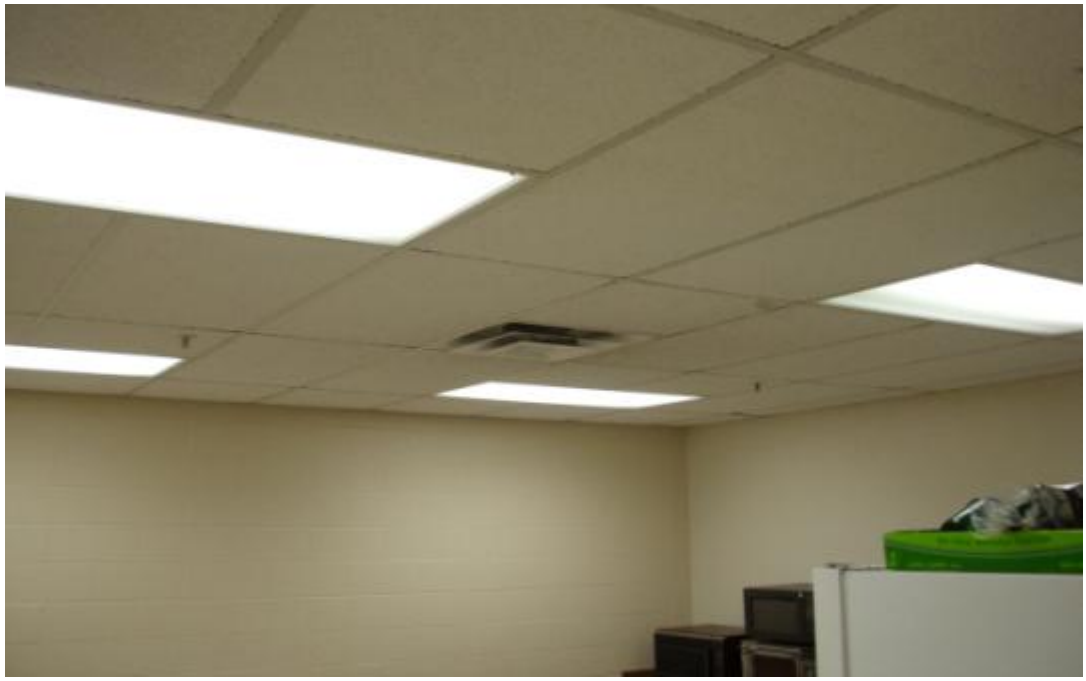
Biggs Readiness Center Photographs

AECOM

Photograph 1

Building Exterior Front

Photograph 2



Typical Ceiling Tile and HVAC Supply

AECOM

Photograph 3

Drill Hall

Photograph 4

Eye Wash Station

AECOM

Photograph 5

Outside of Range Building

Photograph 6

Range From Firing Line

Photograph 7

Typical Construction

Photograph 8

Typical Fiberglass Pipe Insulation

Appendix C

Analytical Results

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Biggs RC	Chain Of Custody:	514264		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/31/2012	Report Date:	10/31/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result	
13008319	BG-01	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008320	BG-02	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008321	BG-03	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008322	BG-04	Flame	Wipe	****	0.111	110	ug/ft^2	15	140	ug/ft^2
13008323	BG-05	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008324	BG-06	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008325	BG-07	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008326	BG-08	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008327	BG-09	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008328	BG-10	Flame	Wipe	****	0.111	110	ug/ft^2	3000	27000	ug/ft^2
13008329	BG-11	Flame	Wipe	****	0.111	110	ug/ft^2	3400000	31000000	ug/ft^2
13008330	BG-12	Flame	Wipe	****	0.111	110	ug/ft^2	21000	190000	ug/ft^2
13008331	BG-13	Flame	Wipe	****	0.111	110	ug/ft^2	3300	30000	ug/ft^2
13008332	BG-14	Flame	Wipe	****	0.111	110	ug/ft^2	690	6200	ug/ft^2
13008333	BG-15	Flame	Wipe	****	0.111	110	ug/ft^2	19000	170000	ug/ft^2
13008334	BG-16	Flame	Wipe	****	0.111	110	ug/ft^2	420	3800	ug/ft^2

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Biggs RC	Chain Of Custody:	514264		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/31/2012	Report Date:	10/31/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Analyst: Non-Responsi

Technical Ma: Non-Responsive

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514264

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

Submittal Information:
1. Job Name: BIGGS RC
2. Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive
5. Submitted by: AECOM Signature: Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Da

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Non-Responsive
Comments:	☐ 2 Day (Date Due: 10/30/12)	☐ Non-Responsive

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)
FLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that blank samples be submitted with all air and surface samples

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

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

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☐ Pb Paint Chip (QTY)
☒ *Pb Dust Wipe (wipe type: ghost) 16 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL. (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER/ LIQUID/ OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/23/12 @ Via: By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/16/12
Job Name: Biggs RC
Page 1 of 1
Job Number: 60277 5001
Job Location: West Virginia
Company: AECOM
Contact Pe[redacted]
Address: 2194 Booth Dr.
Kenova, WV
Phone Num[redacted]
Collected B[redacted]
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
BG-01	Drill Hall - West	Floor	6 in^2	Ghost
BG-02	EAST	Floor		
BG-03	~~KITCHEN~~ Drill Hall	Top of Storage Box		
BG 04	OFFICE B 158	Supply Grille		
BG-05	OFFICE B 211	~~DESK~~ TABLE		
BG-06	OFFICE A 107	~~FILE~~ CABINET Top		
BG-07	Corridor	Floor		
BG-08	~~Corridor~~ B 208 Break Rm	Supply Grille		
BG-09	Kitchen	Top of Oven		
BG-10	RANGE	Exhaust		
BG 11		Floor-Bulletwap		
BG 12		Light		
BG 13		Heater		
BG 14		table		
BG 15		Floor		
BG 16	OUTSIDE RANGE	SIDEWALK		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0951/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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

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




Industrial Hygiene Survey
for WVARNG – Foster Readiness Center
150 Armory Drive
Monaville, West Virginia 25601

AECOM
December 2012
Document No.: 60275401.1/Foster Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Foster Readiness Center
150 Armory Drive
Monaville, West Virginia 25601

Non-Responsive
Industrial Hygienist

Non-Responsive
Project Manager

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Foster Readiness Center

Contents

List of Appendices

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Executive Summary

On October 18, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Foster Readiness Center facility located at 150 Armory Drive in Monaville, West Virginia. Non-[redacted], SFC was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Foster Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Foster Readiness Center is currently staffed by three personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and an Assembly/Drill Hall.

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

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

The Foster Readiness Center is housed in a one-story masonry building, and consists of approximately 50% administrative space and 50% Assembly Hall.

Lighting levels measured throughout the facility were generally adequate as per American National Standards Institute (ANSI) / Illuminating Engineering Society of North America (IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

The wipe samples collected throughout the facility did not detect levels of lead in excess of the ARNG action level of 200 micrograms per square foot (ug/ft^2).

No peeling lead-based paint was observed at the Foster Readiness Center at the time of the survey.

No visible damaged friable suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed at the Foster Readiness Center.

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

1.0 Facility Description and Operations

The Foster Readiness Center, constructed in 1960, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The administrative section consists primarily of offices, classrooms and other administrative type areas, and is finished with sheetrock walls; lay-in ceiling tiles and floor tile. The two-story Assembly/Drill Hall area is finished with painted block walls and a concrete floor. According to site personnel there is a former firing range located along one side of the Assembly/Drill Hall.

The primary activity at the Foster Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall has in the past been rented out for limited civic activities such as group meetings, trade shows, and school activities and to other related local groups and organizations. However, the Assembly Hall has not been used for civic activities for several years. The Foster Readiness Center is currently staffed by three personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 001	Assembly Hall - table	<110 ug/ft^2
Pb – 002	Kitchen - counter	<110 ug/ft^2
Pb – 003	CO Office - desk top	<110 ug/ft^2
Pb – 004	Recruiter Office - shelf	<110 ug/ft^2
Pb – 005	Administrative Corridor - floor	<110 ug/ft^2
Pb – 006	Storage (Former Firing Range - bullet trap area)	<110 ug/ft^2
Pb – 007	Storage (Former Firing Range – shelf)	<110 ug/ft^2
Pb – 008	Storage (Former Fire Range – floor)	<110 ug/ft^2
Pb – 009	Assembly Hall - floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Wipe samples collected in association with the administrative and fire range areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls and ceilings are coated with paint and appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint at the time of the survey.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Foster Readiness Center during this survey. Thermal system piping is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion at the time of the survey.

3.1.4 Housekeeping

The Foster Readiness Center was observed to be generally clean and orderly during this assessment. AECOM did not observe dust accumulation on readily accessible horizontal surfaces within areas commonly used in the facility. A storage area (former firing range bullet trap area) was observed to be disorderly and in need of general housekeeping.

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Foster Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Foster Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Administrative Corridor	0.0	378	73.9	44.3
Room 107 Office	0.0	432	73.5	45.1
Room 105 Office	0.0	451	73.7	47.2
Room 109 Classroom	0.0	419	74.6	45.3
Room 104 Recruiter Office	0.0	395	74.2	44.3
Orderly Office	0.0	388	74.1	45.1
Kitchen	0.5	442	74.5	44.2

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Side Foyer	0.1	289	74.1	46.7
Assembly Drill Hall	0.0	279	74.2	43.6
Men's Restroom	0.0	289	73.1	44.5
Locker Room	0.0	302	72.4	43.3
Storage - Former Firing Range	0.2	267	71.5	41.9
Boiler Room	0.0	271	74.4	45.2
Main Foyer	0.4	289	75.1	46.2

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Foster Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Foster Readiness Center is heated by a boiler that feeds a radiant heating system. Supply and return air is not provided by mechanical means as there is no active ventilation system.

4.1.2 HVAC Maintenance

There was no active HVAC system observed. However, building personnel presumed that the boiler is inspected annually and any associated filters changed at least once a year.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were generally adequate with the exception of five areas noted below.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Administrative Corridor	9.2	Y	5
Room 107 Office	66.7	Y	50
Room 105 Office	26.9	N	50
Room 109 Classroom	47.7	Y	30
Room 104 Recruiter Office	25.3	N	50
Orderly Office	18.3	N	50
Kitchen	12.9	N	50
Side Foyer	53.4	Y	10
Assembly Drill Hall	44.2	Y	30
Men's Restroom	41.3	Y	5
Locker Room	24.7	Y	7
Former Fire Range	9.4	N	30
Boiler Room	29.6	Y	30
Main Foyer	35.7	Y	10
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Foster Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Foster Readiness Center.

AECOM did not observe any damaged, friable suspect asbestos-containing materials at the Foster Readiness Center.

AECOM did not observe peeling lead-based paint at the Foster Readiness Center.

AECOM did not observe evidence of water intrusion at the Foster Readiness Center.

Lighting levels measured throughout the facility were generally adequate with the exception of five areas noted in Table 5-1 as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected in association with the administrative and fire range areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

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

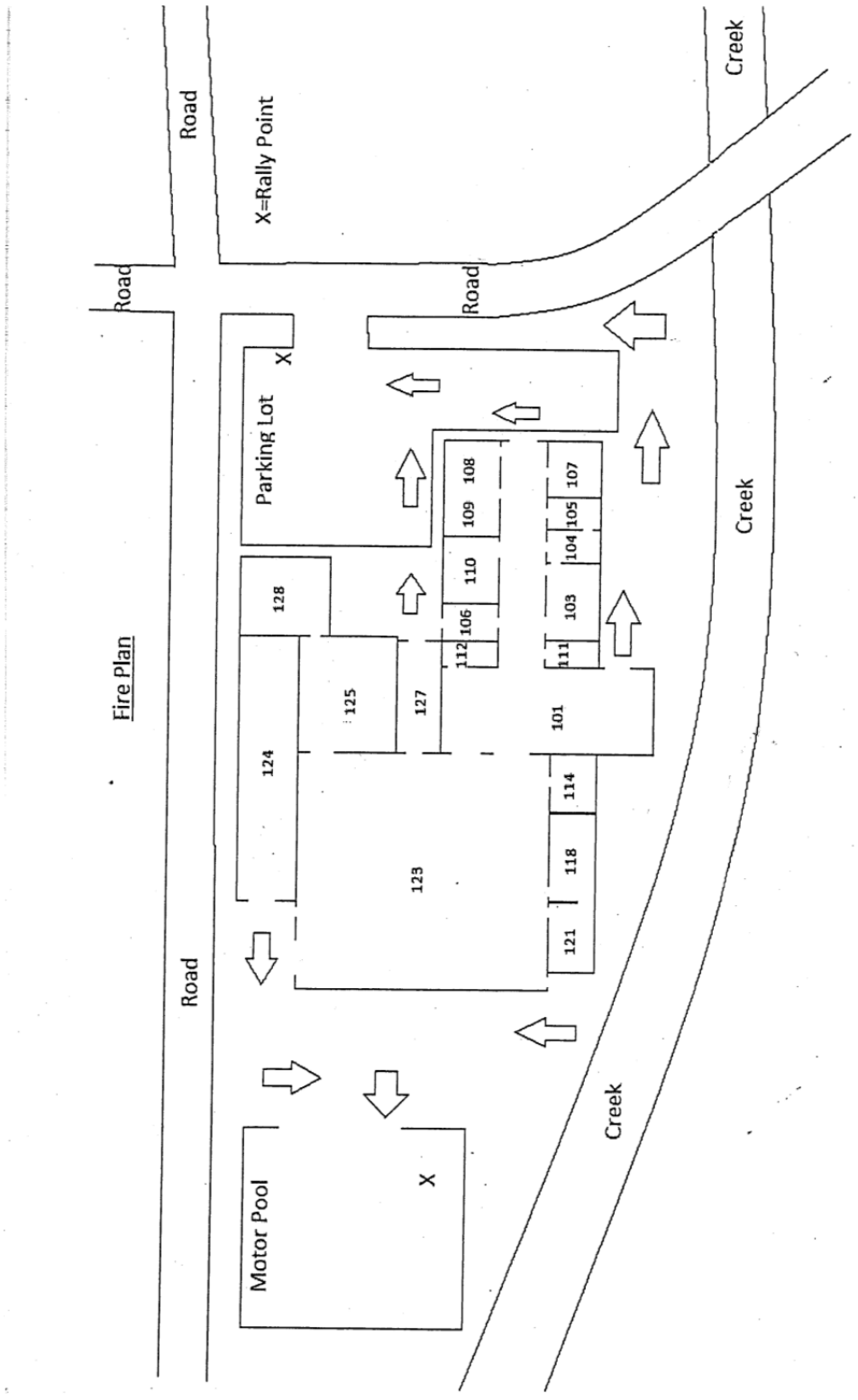
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

Appendix A

Foster Readiness Center Facility Layout

AECOM



Appendix B

Foster Readiness Center Photographs

AECOM

Photograph 1

View of Building Exterior

Photograph 2

View of Administrative Corridor

AECOM

Photograph 3

View of Classroom

Photograph 4

View of Orderly Office Area

AECOM

Photograph 5

View of Suspect ACM Pipe Insulation

Photograph 6

Kitchen

AECOM

Photograph 7

View of Foyer

Photograph 8

View of Radiant Heat Unit In Assembly Hall

AECOM

Photograph 9

View of Assembly Hall

Photograph 10

View of Physical Fitness Area in Assembly Hall

AECOM

Photograph 11

View of Former Bullet Trap Area

Photograph 12

View of Former Fire Range

AECOM

Photograph 13

View of Flammable Storage Cabinet

Appendix C

Analytical Results

AECOM

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:**	Foster/Monaville RC	**Chain Of Custody:**	514251		
Address:	301-JH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	West Virginia	**Date Submitted:**	10/23/2012		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	AECOM		
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	10/27/2012	**Report Date:**	10/30/2012

Attention: Non-[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	Total ug	Final Result	Comments
13007977	Pb-001	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007978	Pb-002	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007979	Pb-003	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007980	Pb-004	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007981	Pb-005	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007982	Pb-006	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007983	Pb-007	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007984	Pb-008	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007985	Pb-009	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AECOM

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:	Foster/Monaville RC	Chain Of Custody:	514251		
Address:	301-IH Old Bay Lane, Attn: ARNG-C/G-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/27/2012	Report Date:	10/30/2012

Attention: Non-[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	Total ug	Final Result	Comments

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Analyst: Non-Respons

Technical Manager: Non-Responsive [redacted]

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

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514251

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

Submittal Information:
1. Job Name: Foster Moorville Rd
2. Job Location: West Virginia
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive
5. Submitted by: AECOM (Signature) Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive aecom.com
Comments:	☐ 2 Day (Date Due): 10/30/12 ☐ Results Required By Noon	☐ Fax: Non-Responsive us.army.mil
		☐ Verb Non-Responsive us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

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

Metals Analysis
☐ Pb Paint Chip (QTY)
☐ *Pb Dust Wipe (wipe type:) 9 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION / SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER AND OTHER	SOIL/ SOLID	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/30/12 @ 1000 Via: FedEx By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/17/12
Job Number: 60275401
Contact Person: Non-Responsive

Job Name: FOSTER/Monaville RC
Job Location: WEST VIRGINIA
Address:

Company: AECOM
Phone Number: 3154320676
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Dusty Surface	1 in^2	Ghost Wipe
Pb-002	Kitchen	" "		
Pb-003	CO OFFICE	Desk		
Pb-004	Recruiter OFFICE	Cabinet		
Pb-005	Corridor	Floor		
Pb-006	Former RANGE	Bullet TRAP		
Pb-007	" "	Cabinet		
Pb-008	" "	Floor		
Pb-009	Outside RANGE in Drill Hall	Floor	"	"

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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

2. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998. http://www.dtic.mil/whs/directives/corres/pdf/605501p.pdf

3. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, 15 February 1990. http://armypubs.army.mil/epubs/pdf/R11_34.PDF

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6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://armypubs.army.mil/epubs/pdf/P40_501.pdf

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

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

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

14. ANSI/ASHRAE 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

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

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

17. OSHA Instruction Letter 02-02-058, Lead Exposure in Construction, Office of Health Compliance Assistance, 13 December 1993.

18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

19. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006. http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 15 July 2004

MEMORANDUM FOR WVARNG, Montgomery Readiness Center, Route 60 East, Alloy, WV 25002-0328

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive [redacted]
Regional Industrial Hygienist

Encl

CF: OHM, MAJ Non-Responsive [redacted]

National Guard Armory
Alloy Readiness Center, Alloy, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned. **RAC - 4**
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Materials suspected of containing asbestos were not observed; however, according to a memo on the bulletin board at the facility, asbestos does exist as thermal pipe insulation located above the plaster ceiling of the men's room and in a wall in the kitchen. It is recommended that an operations and maintenance plan be followed when performing any activities that may disturb the asbestos-containing materials. **RAC - 5**
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. Please note that the caretaker stated that the source of water has been repaired. It should be confirmed that he source of the water damage has been eliminated in order to prevent the possibility of mold growth that may lead to indoor air quality problems. **RAC - 5**
- Measurements for temperature revealed that levels were slightly below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. The heating units should be adjusted, if possible, so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific locations. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore, consideration should

be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible. **RAC - 3**

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Alloy Readiness Center – Alloy, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Alloy Readiness Center – Alloy, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Alloy Readiness Center in Alloy, West Virginia. Non-Responsive performed the evaluation on 20 November 2003. The point of contact at the readiness center was caretaker Non-R i The military unit was deployed on the date of the survey; therefore, no military personnel were present.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials suspected of containing asbestos were not observed; however, according to a memo on the bulletin board at the facility, asbestos does exist as thermal pipe insulation located above the plaster ceiling of the men's room and in a wall in the kitchen. It is recommended that an operations and maintenance plan be followed when performing any activities that may disturb the asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. Please note that the caretaker stated that the source of water has been repaired. It should be confirmed that he source of the water damage has been eliminated in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Measurements for temperature revealed that levels were slightly below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. The heating units should be adjusted, if possible, so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific locations.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore, consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls

with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

An ergonomic evaluation was not conducted at this facility because the unit was deployed on the date of the survey; therefore no military personnel were present for interviews.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Alloy Readiness Center in Alloy, West Virginia. Non-Responsive performed the evaluation on 20 November 2003. The point of contact at the readiness center was caretaker Non-Responsive The military unit was deployed on the date of the survey; therefore, no military personnel were present.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at eight locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E). However, concentrations at two locations sampled had concentrations above the recommended level. The samples collected from the assembly hall (window lever box top surfaces) had lead concentrations of 410 and 270 $\mu g/ft^2$. It is recommended that these surfaces and the immediate area around these surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (converted firing range office area and Commander's Office). Pease note that the military unit was deployed on the date of the survey; therefore no military personnel were present. The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were not observed. However, according to the memo attached (Appendix C) from the Office of the Adjutant General, dated 01 April 1992, asbestos containing material is located in two areas. According to the memo, the asbestos containing material is thermal pipe insulation located above the plaster ceiling in the men's room (approximately 15 linear feet) and in the kitchen wall (approximately 8 linear feet). Please note that the memo is displayed on the main bulletin board in the hallway of the armory.

An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection did not reveal any mold or current water damage; however, old water damage was observed on the ceiling and wall of the converted firing range.

The source of the water damage was likely from roof leaks. Please note that the caretaker stated that the source of water damage has been repaired. It should be confirmed that the source of the water damage has been eliminated in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees were not conducted. The unit was deployed on the date of the survey; therefore no military personnel were present.

2.3.2 Indoor Air Quality

Interview with employees and measurements for carbon dioxide and humidity revealed no indoor air quality concerns at the armory. However, measurements for temperature revealed a level that was slightly below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

It is recommended that, if possible, the heating units be adjusted so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific locations.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the readiness NCO's office (TNG on map), 1ST SGT office (REC on map), female latrine, and commander's office (ADMIN on map). Please note that additional lighting that meets the requirements was provided at the desk area of the commander's office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The firing range was converted into a storage room and a maintenance office (used on drill weekends). The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- bullet trap at 1000 micrograms lead per square foot ($\mu g/ft^2$);
- light fixture at 160 $\mu g/ft^2$;
- stored item (cabinet top surface) at 540 $\mu g/ft^2$;
- floor at 22 $\mu g/ft^2$; and
- floor outside the range at 12 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A. Please note that a list of employees was not available since the military unit was deployed at the time of the survey.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, asbestos-containing material, water damage, indoor air quality lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

An ergonomic evaluation was not conducted at this facility because the unit was deployed on the date of the survey; therefore no military personnel were present for interviews.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Alloy, West Virginia
Date of Sampling: 20 November 2003

Sample Number	Location	Results, µg/ft² [a]
WVALL324-1	Assembly room - table top (See Building Layout Appendix B)	14
WVALL324-2	Assembly room -- table top (See Building Layout Appendix B)	46
WVALL324-3	Assembly room - window lever box top surface (See Building Layout -- Appendix B)	410
WVALL324-4	Assembly room -- window lever box top surface (See Building Layout -- Appendix B)	97
WVALL324-5	Assembly room - window lever box top surface (See Building Layout - Appendix B)	270
WVALL324-6	Field Blank	< 0.3 µg
WVALL324-13	Readiness NCO's office (TNC on map) - cabinet top	< 2.7
WVALL324-14	Kitchen – paper towel dispenser top surface	5.3
WVALL324-15	Classroom - television top surface	5.1
WVALL324-16	Supply Room - table top	19
WVALL324-17	Recruiter's Office (CO/1SG on map) - table top	8.7
WVALL324-18	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Alloy, West Virginia
Date of Sampling: 20 November 2003

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3)[a]
		Time Sampled / Minutes	Flow Rate (lpm)[b]	Volume (liters)	
WVALL324-A1	Converted Firing Range Office Area	1140-1311/91	2.4499	222.94	<0.004
WVALL324-A2	Commander's Office (ADMIN on map)	1141-1309/88	2.4914	219.24	<0.005
WVALL324-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Alloy, West Virginia
Date of Sampling: 20 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Readiness NCO Office (TNG on map)	1	640	44.0	67.1
Outdoors	-	506	51.2	53.6

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Alloy, West Virginia

Date of Sampling: 20 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Readiness NCO's Office (TNG on map)	26.1-53.7	70	No
1ST SGT Office (REC on map)	18.1-43.7	70	No
Classroom	57.5-88.3	70	Some Areas
Female Latrine	1.7-9.8	40	No
Commander's Office (ADMIN on map)	12.7-46.7	70	No*

[a] fc – Footcandles

* Additional lighting provided above desk/working area

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Alloy, West Virginia

Date of Sampling: 20 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVALL324-7	Bullet Trap	1000
WVALL324-8	Light Fixture	160
WVALL324-9	Stored Items – table top	540
WVALL324-10	Floor	22
WVALL324-11	Floor outside the range	12
WVALL324-12	Field Blank	< 0.3 ug

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Alloy Armory West Virginia ARNG	Alloy

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
20 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	unknown

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 - 779 - 2671	Det 1 COB and Det 4 HHC 1STBN 150th AR	3	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	unknown	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
BOYDT XXXX	Video display terminal	3-low	Uncontrolled Physical
7439-92-1	Lead, inorganic dusts & fumes as Pb	2-moderate	Uncontrolled Respiratory
1332-21-4	Asbestos (fibers)	3-low	Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAILABLE	CIV

SECTION 6. COMMENTS

Non-Responsive

___No comments See attached sheet

conducted the survey. Building contains 1 civilian (military) and military unit displayed at date of survey. no full-time employee list could be provided.

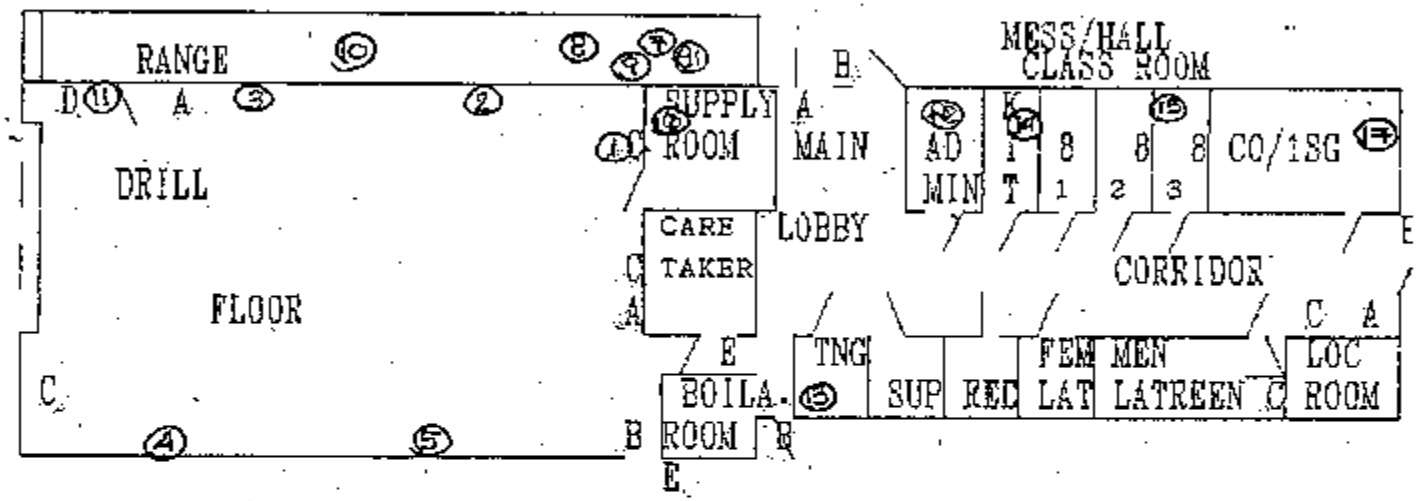
PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout

Alloy West Virginia Army National Guard



FIRE EVACUATION

PLAN/GUIDE

INCASE OF FIRE PHONE: 442-5183

SYMBOLS / LOCATION

A = FIRE ALARMS
B = FIRE EXITS
C = FIRE EXTINGISHER
D = FIRE HOSE
E = STAIR CASE

STATE OF WEST VIRGINIA
OFFICE OF THE ADJUTANT GENERAL
1703 COONSKIN DRIVE
CHARLESTON, WEST VIRGINIA 25311-1085

Non-Responsive
Major General, WVARNG
The Adjutant General

1 April 1992

TO: Occupants of the Montgomery National Guard Armory

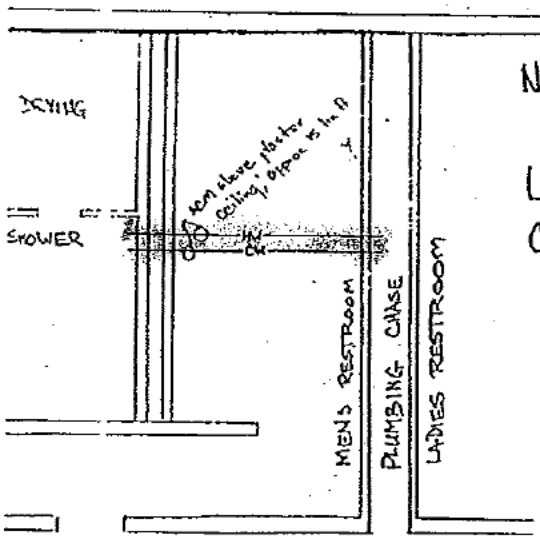
FROM: MG Non-Responsive The Adjutant General

SUBJECT: Asbestos Containing Material (ACM)

ACM is located in this building. The sketch below details the location and amount. ACM only presents a health hazard when the fibers become airborne and are inhaled. The presense of ACM does not represent a health hazard.

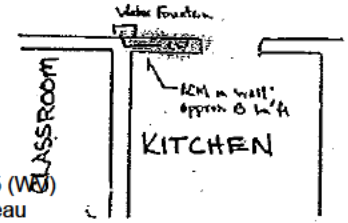
DO NOT DISTURB THE ASBESTOS CONTAINING MATERIAL

Report any evidence of disturbance, damage, or improper action relative to ACM by building occupants to the Maintenance Supervisor, 341-6363.



Note- ACM location highlighted in Yellow
ACM is Thermal Pipe Insulation
Location- above plaster ceiling
Quantity - approx 23 lin ft

CORRIDOR



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Alloy	**Chain Of Custody:**	119408
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	12/04/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	05-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0411149	WVALL324-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	14	ug/ft²	
0411150	WVALL324-2	Furnace	Wipe	****	0.111	6.75	ug/ft²	46	ug/ft²	
0411151	WVALL324-3	Furnace	Wipe	****	0.111	67.51	ug/ft²	410	ug/ft²	
0411152	WVALL324-4	Furnace	Wipe	****	0.111	33.75	ug/ft²	97	ug/ft²	
0411153	WVALL324-5	Furnace	Wipe	****	0.111	67.51	ug/ft²	270	ug/ft²	
0411154	WVALL324-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0411155	WVALL324-7	Flame	Wipe	****	0.111	108.01	ug/ft²	1000	ug/ft²	
0411156	WVALL324-8	Furnace	Wipe	****	0.111	67.51	ug/ft²	160	ug/ft²	
0411157	WVALL324-9	Flame	Wipe	****	0.111	108.01	ug/ft²	540	ug/ft²	
0411158	WVALL324-10	Furnace	Wipe	****	0.111	2.70	ug/ft²	22	ug/ft²	
0411159	WVALL324-11	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0411160	WVALL324-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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: Non-Responsive

Technical Manager: Non-Responsive

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:**	WVALL324	**Chain Of Custody:**	121274
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Alloy	**Date Analyzed:**	12/30/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	30-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413666	WVALL324-13	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0413667	WVALL324-14	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.3	ug/ft²	
0413668	WVALL324-15	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.1	ug/ft²	
0413669	WVALL324-16	Furnace	Wipe	****	0.111	2.70	ug/ft²	19	ug/ft²	
0413670	WVALL324-17	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.7	ug/ft²	
0413671	WVALL324-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
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.

An[redacted] Non-Responsive

Technical Manager: Non-Responsive

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVOAK321-A1 through VACLI325-A3
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5799
DCL Sample ID No.:	03-34380 through 03-34414
Sample Receipt Date:	11/25/2003
Preparation Date:	12/02/03
Analysis Date:	12/03/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9489

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVOAK321-A1	03-34380	228.69	ND	<0.004
WVOAK321-A2	03-34381	225.34	ND	<0.004
WVOAK321-A3	03-34382	0	ND	-
WVBEC321-A1	03-34384	305.03	ND	<0.003
WVBEC321-A2	03-34385	301.29	ND	<0.003
WVBEC321-A3	03-34386	0	ND	-
WVDUN323-A1	03-34387	418.71	ND	<0.002
WVDUN323-A2	03-34388	426.37	ND	<0.002
WVDUN323-A3	03-34389	0	ND	-
WV2CH322-A1	03-34390	330.94	ND	<0.003
WV2CH322-A2	03-34391	324.29	ND	<0.003
WV2CH322-A3	03-34392	0	ND	-
WV1CH322-A1	03-34393	316.36	ND	<0.003
WV1CH322-A2	03-34394	312.78	ND	<0.003
WV1CH322-A3	03-34395	0	ND	-
WVSTA323-A1	03-34396	350.61	ND	<0.003
WVSTA323-A2	03-34397	339.14	ND	<0.003
WVSTA323-A3	03-34398	0	ND	-
WVCHA324-A1	03-34400	162.63	ND	<0.006
WVCHA324-A2	03-34401	172.47	ND	<0.006
	Prep Blank		ND	
% Recovery	LCS 1		109.	
% Recovery	LCS 2		111.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVCHA324-A3	03-34402	0	ND	-
WVALL324-A1	03-34403	222.94	ND	<0.004
WVALL324-A2	03-34404	219.24	ND	<0.005
WVALL324-A3	03-34405	0	ND	-
WVRON325-A1	03-34406	327.48	ND	<0.003
WVRON325-A2	03-34407	322.77	ND	<0.003
WVRON325-A3	03-34408	0	ND	-
VACLI325-A1	03-34412	390.23	ND	<0.003
VACLI325-A2	03-34413	405.99	ND	<0.002
VACLI325-A3	03-34414	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 3		107.	
% Recovery	LCS 4		105.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Alloy
Date: 11/20/2003

Sample 1

Sample Number: WVALL324-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.462	2.432
	2.465	2.439
	2.457	2.442
	2.460	2.442
Average	**2.461**	**2.439**

Average Pre and Post **2.4499**

Time 1	11:40
Time 2	13:11
Total Time Sampled	**1:31**
Minutes Sampled	91.00

Volume **222.94 Liters**

Sample 2

Sample Number: WVALL324-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.51	2.477
	2.506	2.475
	2.509	2.473
	2.518	2.463
Average	**2.511**	**2.472**

Average Pre and Post **2.4914**

Time 1	11:41
Time 2	13:09
Total Time Sampled	**1:28**
Minutes Sampled	88.00

Volume **219.24 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory Location: Alloy
Date: 11/20/03

Sample 1

Sample Number: WVALL324-A1
Pump: 648615 339

	Pre Flow Rate	Post Flow Rate
	2462	2432
	65	39
	57	42
Average	60	42
Average Pre and Post	2461	2439

Time 1 1140
Time 2 1311
Total Time Sampled
Minutes Sampled

Volume Liters

Sample 2

Sample Number: WVALL324-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2510	2477
	06	75
	09	73
Average	18	63
Average Pre and Post	2511	247462

Time 1 1141
Time 2 1309
Total Time Sampled
Minutes Sampled

Volume Liters

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories. Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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(b)(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.

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Shaw™ Shaw Environmental, Inc.

National Guard Armory
Beckley Readiness Center – Beckley, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

17 February 2004

National Guard Armory
Beckley Readiness Center – Beckley, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
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17 February 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Beckley Readiness Center in Beckley, West Virginia. Non-Responsive performed the evaluation on 17 November 2003. The point of contact at the readiness center was SGT Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources

- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in room #11 and Sgt Roger Overbay's office (Room #26). It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the building that may be contaminated with lead should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in room #11, Sgt Roger Overbay's office, Scout locker room # 12, room adjacent to the former maintenance bay, and the converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- The housekeeping was determined to be average since dust was observed on air grilles and vents throughout the building. The housekeeping in these areas should be improved.
- Indoor air quality measurements for temperature revealed a level that slightly exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating

units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes. In addition, interviews with employees revealed indoor air quality concerns in the supply and storage rooms. These areas should be evaluated to determine if the ventilation could be improved. The use of fans may be considered to assist in circulating the air in these areas.

- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap and light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Beckley Readiness Center in Beckley, West Virginia. Non-Responsive performed the evaluation on 17 November 2003. The point of contact at the readiness center was SGT Non-Responsiv

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

The armory did not contain a drill/assembly hall. Therefore, wipe samples were only collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at two locations. The samples collected from the heater unit top surface located in room #11 and the desk shelf in SGT Roger Overbay's office (Room #26) had lead concentrations of 370 and 310 $\mu g/ft^2$, respectively. It is recommended that these surfaces and the immediate areas around these surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the building that may be contaminated with lead should be thoroughly cleaned.

In addition to the areas listed above, wipe sampling for lead revealed a concentration above a level of 40 $\mu g/ft^2$ in the scout locker room #12 (locker #118 top surface), room adjacent to the former maintenance bay (cabinet top surface), and the converted firing range. Please note that the *Recommendations for Surface Lead Dust in*

Armories (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on one (1) full-time building occupant. In addition, a general sample was taken in the Troop C supply room. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were pipe insulation and floor tiles. The pipe insulation was observed in pipe joints/elbows in latrine room #3 (approximately nine elbows/joints), caretaker's latrine (approximately 4 elbows/joints), women's latrine (approximately 16 elbows/joints), Troop C MOB room (approximately 17 elbows/joints), room #11, and boiler room (approximately 55 elbows/joints). Since the building contains "drop down" ceiling in most of the rooms, it can be assumed that suspected asbestos containing pipe insulation is present in the remaining pipe joints and elbows throughout the facility. Pipe insulation suspected of containing asbestos was also observed as insulation on the ductwork in the boiler room (approximately 50-60 linear feet) Due to the extensiveness of the ductwork and "drop down" ceiling, an exact measurement of pipe insulation was not feasible.

Insulation also remains on a tank (approximately 6 linear feet) in the boiler room. The condition of the insulation material was considered good (no rips, tears, or other damage). Floor tiles were observed in rooms #26, #27 and #28 (approximately 1034 square feet). The condition of the floor tiles was average due to wear and damaged tiles at a doorstop. Please note that the tile is completely covered with carpet in all three rooms.

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage accompanied by mold on the ceiling in room 18 (Troop C MOB room). Water damage not accompanied by mold was observed on the ceilings the conference room #16, room #11, room #6, room#5, and locker room #19.

The source of the water damage throughout the building was likely from roof leaks. However, the source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be average since dust was observed on air grilles and vents throughout the building. The housekeeping in these areas should be improved.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Measurements for carbon dioxide and humidity revealed no indoor air quality concerns at the armory. However, measurements for temperature revealed a level that slightly exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.

Interview with employees revealed that personnel experience headaches in the supply room (Troop C Supply), and that lack of ventilation is a concern in the supply and storage rooms. These areas should be evaluated to determine if the ventilation could be improved. The use of fans may be considered to assist in circulating the air in these areas.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in some areas, including the Troop C commander office, kitchen, logistics/operations office, West Virginia Room/classroom, and training office.

Consideration should be given to providing more lighting to these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The room is used as a supply room. The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- bullet trap at 18000 micrograms lead per square foot ($\mu g/ft^2$);
- light fixture at 100000 $\mu g/ft^2$;
- stored item (filing cabinet top surface) 870 $\mu g/ft^2$;
- floor at 140 $\mu g/ft^2$; and
- floor outside the range at 15 $\mu g/ft^2$.

The lead levels at three of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas and the stored items in these areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the bullet trap and light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, visible mold, housekeeping, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Beckley, West Virginia
Date of Sampling: 17 November 2003

Sample Number	Location	Results,µg/ft[2 a]
WVBEC321-1	Kitchen (Room #7) – stove top surface	< 2.7
WVBEC321-2	West Virginia Room/Classroom - - windowsill	7.1
WVBEC321-3	Latrine (Room #3) – heater vent top surface	26
WVBEC321-4	Hallway - - supply room door serving counter top surface	< 2.7
WVBEC321-5	Room #11 – heater unit top surface	370
WVBEC321-6	Field Blank	< 0.3 µg
WVBEC321-7	Scout Locker Room (Room #12) – Locker #118 top surface	96
WVBEC321-8	Training NCO Office (Room #8) – desktop	5.5
WVBEC321-9	Troop C 1st and 3rd Locker Room – locker #65 top surface	4.3
WVBEC321-10	Commander Troop C (Room #19) cabinet top surface	< 2.7
WVBEC321-11	Room #26 – desk shelf top surface	310
WVBEC321-12	Field Blank	< 0.3 µg
WVBEC321-13	Room adjacent to former maintenance bay cabinet top surface	58
WVBEC321-14	Troop C Supply (Room #17) shelf top surface	< 2.7

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft^2.

Table 2
Breathing Zone/General Air Samples for Lead
National Guard Armory
Beckley, West Virginia
Date of Sampling: 17 November 2003

Sample Number	Employee/ General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVBEC321-A1	Non-Responsive	0840-1040/120	2.5419	305.03	<0.003
WVBEC321-A2	Troop C Supply Room	0841-1040/119	2.5319	301.29	<0.003
WVBEC321-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3

Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature

National Guard Armory

Beckley, West Virginia

Date of Sampling: 17 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Beckley Room/Day Room	1	662	44.4	78.5
Outdoors	-	497	42.9	71.2

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Beckley, West Virginia

Date of Sampling: 17 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Troop C Commander Office	35.1-48.3	70	No
Kitchen	25.1-52.8	70	No
Hallway	10.2-37.8	7.5	Yes
Logistics/Operations Office	10.3-16.0	70	No
Latrine	11-46.5	40	Some Areas
Women's Latrine	10.5-62.7	40	Some Areas
West Virginia Room/Classroom	12.1-36.7	70	No
Training Office	21.2-46.7	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Beckley, West Virginia

Date of Sampling: 17 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVBEC321-15	Bullet Trap Floor	18000
WVBEC321-16	Light Fixtures	100000
WVBEC321-17	Stored Item – shelf	870
WVBEC321-18	Field Blank	< 0.3 ug
WVBEC321-19	Floor	140
WVBEC321-20	Floor Outside of Range	15

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Beckley Annory West Virginia Arng	Beckley

OCATION/CODE	OPERATION/CODE
Administrative Areas/ AA	Administrative Operations/ADO

URVEY DATE	EVALUATOR (Initials)
17 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SGT

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 253 9301	CO C / DET 5 HHC 1st BN 150th AR	04	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	3	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/MATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTYXXX	Video display terminal	3-low	D-Uncontrolled Physical
7439-92-1	Lead, inorganic dust and fumes, as Pb	2 moderate	C Uncontrolled Respiratory
1332-21-4	Asbestos (other)	2 moderate	C Uncontrolled Respiratory
POHEATSTR	Heat Stress	3-low	D Uncontrolled Physical

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	Non-Responsive	CATEGORY
Non-Responsive			M	NOT AVAILABLE	MIL
					CIV

SECTION 6. COMMENTS

___ No comments See attached sheet

Survey conducted by Michele Seman. Building contains 3 full-time military employees, and 1 civilian caretaker. Military personnel perform mainly administrative functions. Please note mold was observed at the armory.

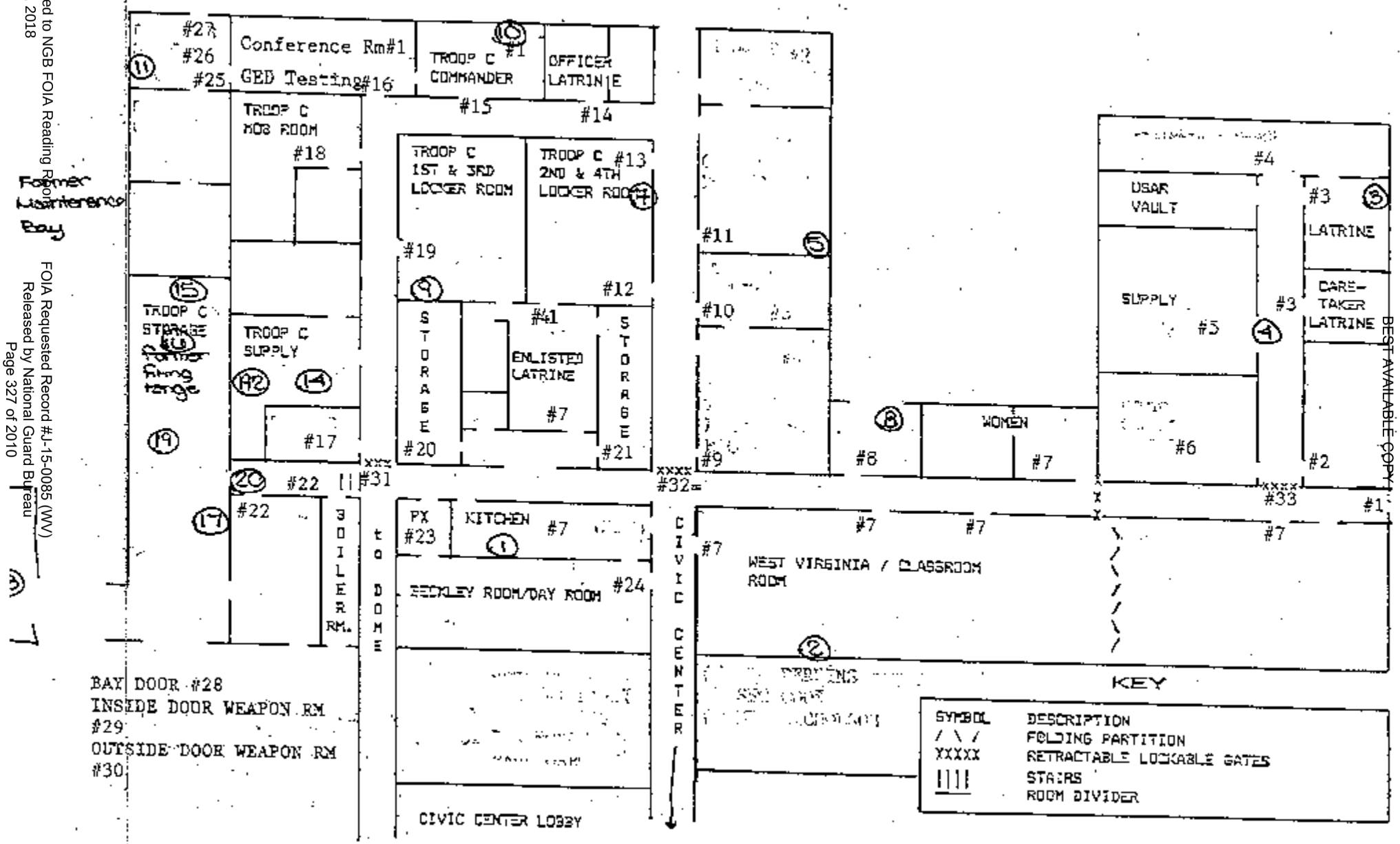
PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout

BECKLEY NATIONAL GUARD ARMORY



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Beckley	**Chain Of Custody:**	119401
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	12/02/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	05-Dec-03
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
0411036	WVBEC321-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0411037	WVBEC321-2	Furnace	Wipe	****	0.111	2.70	ug/ft²	7.1	ug/ft²	
0411038	WVBEC321-3	Furnace	Wipe	****	0.111	2.70	ug/ft²	26	ug/ft²	
0411039	WVBEC321-4	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0411040	WVBEC321-5	Flame	Wipe	****	0.111	108.01	ug/ft²	370	ug/ft²	
0411041	WVBEC321-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0411042	WVBEC321-7	Furnace	Wipe	****	0.111	33.75	ug/ft²	96	ug/ft²	
0411043	WVBEC321-8	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.5	ug/ft²	
0411044	WVBEC321-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.3	ug/ft²	
0411045	WVBEC321-10	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0411046	WVBEC321-11	Flame	Wipe	****	0.111	108.01	ug/ft²	310	ug/ft²	
0411047	WVBEC321-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0411048	WVBEC321-13	Furnace	Wipe	****	0.111	33.75	ug/ft²	58	ug/ft²	
0411049	WVBEC321-14	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0411050	WVBEC321-15	Flame	Wipe	****	0.111	108.01	ug/ft²	18000	ug/ft²	
0411051	WVBEC321-16	Flame	Wipe	****	0.111	108.01	ug/ft²	100000	ug/ft²	
0411052	WVBEC321-17	Flame	Wipe	****	0.111	108.01	ug/ft²	870	ug/ft²	
0411053	WVBEC321-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0411054	WVBEC321-19	Furnace	Wipe	****	0.111	33.75	ug/ft²	140	ug/ft²	
0411055	WVBEC321-20	Furnace	Wipe	****	0.111	2.70	ug/ft²	15	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

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Beckley	**Chain Of Custody:**	11940t
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	12/02/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	05-Dec-03

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

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

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

Analyst: [redacted] **Technical Manager:** [redacted]

An AIHA (#8363), 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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	Lead
Client Sample No.:	WVOAK321-A1 through VACLI325-A3
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5799
DCL Sample ID No.:	03-34380 through 03-34414
Sample Receipt Date:	11/25/2003
Preparation Date:	12/02/03
Analysis Date:	12/03/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVOAK321-A1	03-34380	228.69	ND	<0.004
WVOAK321-A2	03-34381	225.34	ND	<0.004
WVOAK321-A3	03-34382	0	ND	-
WVBEC321-A1	03-34384	305.03	ND	<0.003
WVBEC321-A2	03-34385	301.29	ND	<0.003
WVBEC321-A3	03-34386	0	ND	-
WVDUN323-A1	03-34387	418.71	ND	<0.002
WVDUN323-A2	03-34388	426.37	ND	<0.002
WVDUN323-A3	03-34389	0	ND	-
WV2CH322-A1	03-34390	330.94	ND	<0.003
WV2CH322-A2	03-34391	324.29	ND	<0.003
WV2CH322-A3	03-34392	0	ND	-
WV1CH322-A1	03-34393	316.36	ND	<0.003
WV1CH322-A2	03-34394	312.78	ND	<0.003
WV1CH322-A3	03-34395	0	ND	-
WVSTA323-A1	03-34396	350.61	ND	<0.003
WVSTA323-A2	03-34397	339.14	ND	<0.003
WVSTA323-A3	03-34398	0	ND	-
WVCHA324-A1	03-34400	162.63	ND	<0.006
WVCHA324-A2	03-34401	172.47	ND	<0.006
	Prep Blank		ND	
% Recovery	LCS 1		109.	
% Recovery	LCS 2		111.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVCHA324-A3	03-34402	0	ND	-
WVALL324-A1	03-34403	222.94	ND	<0.004
WVALL324-A2	03-34404	219.24	ND	<0.005
WVALL324-A3	03-34405	0	ND	-
WVRON325-A1	03-34406	327.48	ND	<0.003
WVRON325-A2	03-34407	322.77	ND	<0.003
WVRON325-A3	03-34408	0	ND	-
VACLI325-A1	03-34412	390.23	ND	<0.003
VACLI325-A2	03-34413	405.99	ND	<0.002
VACLI325-A3	03-34414	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 3		107.	
% Recovery	LCS 4		105.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Beckley
Date: 11/17/2003

Sample 1

Sample Number: WVBEC321-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.568	2.529
	2.559	2.520
	2.559	2.527
	2.546	2.527
Average	**2.558**	**2.526**

Average Pre and Post 2.5419

Time 1 8:40
Time 2 10:40
Total Time Sampled 2:00
Minutes Sampled 120.00

Volume 305.03 Liters

Sample 2

Sample Number: WVBEC321-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.486	2.548
	2.529	2.553
	2.526	2.562
	2.491	2.56
Average	**2.508**	**2.556**

Average Pre and Post 2.5319

Time 1 8:41
Time 2 10:40
Total Time Sampled 1:59
Minutes Sampled 119.00

Volume 301.29 Liters

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 07 July 2004

MEMORANDUM FOR WVARNG, Bluefield/Brush Fork Readiness Center, ATTN: SGT Non-Responsive 2915 Old Bramwell Road, Bluefield, WV 24701-9999

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive

Encl

Regional Industrial Hygienist

CF: OHM, MA Non-Responsive

National Guard Armory
Brushfork Readiness Center, Bluefield, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the converted firing range (outside the range and floor). Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Measurements for humidity revealed levels that did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in any of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to replace the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible. **RAC - 4**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE	OTSG APPROVED (Date)
WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD	

DIRECTORATE Bluefield Armory BLDG/ROOM Bluefield

SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study

JOB DESCRIPTION/SERIES Military/Administrative Operations

SAMPLING DATE December 4, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.003	<0.003	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive ndustrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility)					
NAME: Non-Responsive 12/4/2003		HISTORY/PHYSICAL		FLOW CHART	
SSN: (Last four Non-R i		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)	
UNIT PHONE NO: 304-589-3361		DIAGNOSTIC STUDIES		TREATMENT	

DA FORM 1 MAY 78 4700

HSXR-APG-Z OP 32 1 Jan 90

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Brushfork Readiness Center – Bluefield, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Brushfork Readiness Center – Bluefield, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Brushfork Readiness Center in Bluefield, West Virginia. Non-Respon performed the evaluation on 04 December 2003. The point of contact at the readiness center was SGT Non-Responsive Please note that the military unit's full time staff was deployed at the date of the survey; the personnel at the facility during the survey was replacement military and family assistance center staff.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Water Damage
- Presence of Mold

- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the converted firing range (outside the range and floor). Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Measurements for humidity revealed levels that did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in any of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to replace the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Brushfork Readiness Center in Bluefield, West Virginia. Non-Responsiv performed the evaluation on 04 December 2003. The point of contact at the readiness center was SGT Non-Responsive Please note that the military unit's full time staff was deployed at the date of the survey; the personnel at the facility during the survey was replacement military and family assistance center staff.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary.

However, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the converted firing range (outside of the range and floor). Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on one (1) full-time building occupant. In addition, a general sample was taken in the day room (family assistance center). (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory, therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were pipe insulation and floor tiles.

The pipe insulation was observed in pipe joints/elbows in medic room (approximately three elbows/joints), male latrine between locker room and concession stand (approximately six elbows/joints), and boiler room (approximately six elbows/joints). It can be assumed that suspected asbestos containing pipe insulation is present in the remaining pipe joints and elbows throughout the facility. The condition of the insulation material was considered good (no rips, tears, or other damage).

Floor tiles were observed in the 1st SGT office, main hallway, recruiter's office, office #133, office #137, office #140, office #144, office #146, office #147, office #145, office #143, and both concession stands on the second floor (approximately 3569.5 square feet). The condition of the floor tiles was considered good in most locations except in office #133 as the tiles were worn at the chair area, office #137 due to missing tiles, and office #144 where the tiles were worn at the copier area.

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection did not reveal any water damage or visible mold.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interviews with employees and measurements for carbon dioxide and temperature revealed no indoor air quality concerns at the armory. However, measurements for humidity revealed that levels did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)

- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most of the locations measured, including the weight room (gym), classroom, kitchen, drill hall, office #146, commander's office (office #147), and office #143. Please note that the lighting in the recruiter's office did not meet the minimum requirements; however additional lighting meeting minimum requirements is provided at the desk in the office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The space was converted into a storage room. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 150 micrograms lead per square foot ($\mu g/ft^2$);
- floor in the office area at 70 $\mu g/ft^2$;
- stored item (table top) at 9.9 $\mu g/ft^2$;
- overhead heater at 71000 $\mu g/ft^2$.
- light fixture at 4600 $\mu g/ft^2$; and
- bullet trap at 620$\mu g/ft^2$.

The lead levels at three of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to replace the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, housekeeping, water damage, visible mold, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Bluefield, West Virginia
Date of Sampling: 04 December 2003

Sample Number	Location	Results,µg/ft² [a]
WVBLU338-1	Assembly room – bleacher surface (See Building Layout Appendix B)	11
WVBLU338-2	Assembly room – bleacher surface (See Building Layout Appendix B)	8.9
WVBLU338-3	Assembly room – stage surface (See Building Layout Appendix B)	6.3
WVBLU338-4	Assembly room – bleacher surface (See Building Layout Appendix B)	12
WVBLU338-5	Assembly room – bleacher surface (See Building Layout – Appendix B)	4.4
WVBLU338-6	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone/General Air Samples for Lead
National Guard Armory
Bluefield, West Virginia
Date of Sampling: 04 December 2003

Sample Number	Employee/ General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVBLU338-A1	Non-Responsive	1313-1532/139	2.4489	340.39	<0.003
WVBLU338-A2	Day Room (Family Assistance Center)	1316-1531/135	2.4193	326.60	<0.003
WVBLU338-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Bluefield, West Virginia
Date of Sampling: 04 December 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Recruiter's Office	1	550	23.7	71.2
2nd Floor - Women's Latrine	1	604	28.0	73.6
Outdoors	-	523	75.7	38.8

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Bluefield, West Virginia

Date of Sampling: 04 December 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Weight Room (Gym)	12.45-20.1	70	No
Day Room (Family Assistance Center Office)	23.2-70.0	70	Some Areas
Classroom	16.71-43.8	70	No
Kitchen	26.4-53.8	70	No
Drill Hall	13.6-18.9	70	No
Men's Latrine in Locker Room	31.6-59.8	40	Some Areas
Men's Latrine	25.6-60.1	40	Some Areas
Recruiter's Office	21.4-62.3	70	No*
Main Hallway	2.47-16.45	7.5	Some Areas
Office #146	17.1-41.8	70	No
Commander's Office (Office #147)	7.69-45.8	70	No
Office #143	16.2-50.1	70	No

[a] fc - - Footcandles

*additional lighting provided that meets the minimum requirements.

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Bluefield, West Virginia

Date of Sampling: 04 December 2003

Sample Number	Location	Results, µg/ft² [a]
WVBLU338-7	Outside the range	150
WVBLU338-8	Floor	74
WVBLU338-9	Stored Item (table top)	9.9
WVBLU338-10	Overhead Heater	71000
WVBLU338-11	Light Fixture	4600
WVBLU338-12	Field Blank	0.74 µg
WVBLU338-13	Bullet Trap	620

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Bruhfork ARNORY West Virginia ARNG	Bluefield

OCATION/CODE	OPERATION/CODE
Administrative Areas/ AA	Administrative Operations/ADO

URVEY DATE	EVALUATOR (Initials)
04 December 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR (current)
Army National Guard	XX	Non-Responsive :SGT

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
	Headquarters 150th Armor Bastalion	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1/3*	11/1*	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME UNIT			SAFETY BELT/HARNESS					

deployed / current — see section 5 and

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D- Uncontrolled Physical

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
see attached sheet, please note that military employees deployed on date of survey					

SECTION 6. COMMENTS

No comments ☐ See attached sheet ☑

Survey conducted by Lucille Benson. Building currently contains 3 civilian employees and 11 military employees (Please note that military employees was deployed at date of survey. If not deployed facility would contain 11 military employees and 1 civilian caretaker. Employees perform mainly administrative functions.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Bluefield National Guard Armory
04 December 2004

Unit: Headquarters 150th Armor Battalion

Full-Time Staff (Deployed)

LAST NAME, FIRST NAME, MI	SEX	SSN	CATEGORY
Non-Responsive	Male	Unavailable	MIL
	Male	Unavailable	MIL
	Male	Unavailable	MIL
	Male	Unavailable	MIL
	Male	Unavailable	MIL
	Male	Unavailable	MIL
	Male	Unavailable	MIL
	Male	Unavailable	MIL
	Male	Unavailable	MIL
	Male	Unavailable	MIL

Full-Time Staff (Current at date of survey)

Non-Responsive	Male	Unavailable	CIV
	Male	last 4# Non-Respon	MIL
	Male	Unavailable	CIV
	Male	Unavailable	CIV

Appendix B
Building Layout

ALL SECTIONS OF BBC 1-150 ARMOR :

You are expected to have your own area of operations policed NLT 1600 each drill day. In addition, you must police the other areas of the building as assigned below. This includes picking up all trash and emptying all trash containers in your designated area. Shaded areas are not considered part of your zone.

I- S4 SHOP

II-PAC SECTION

III-S2/3 SECTION

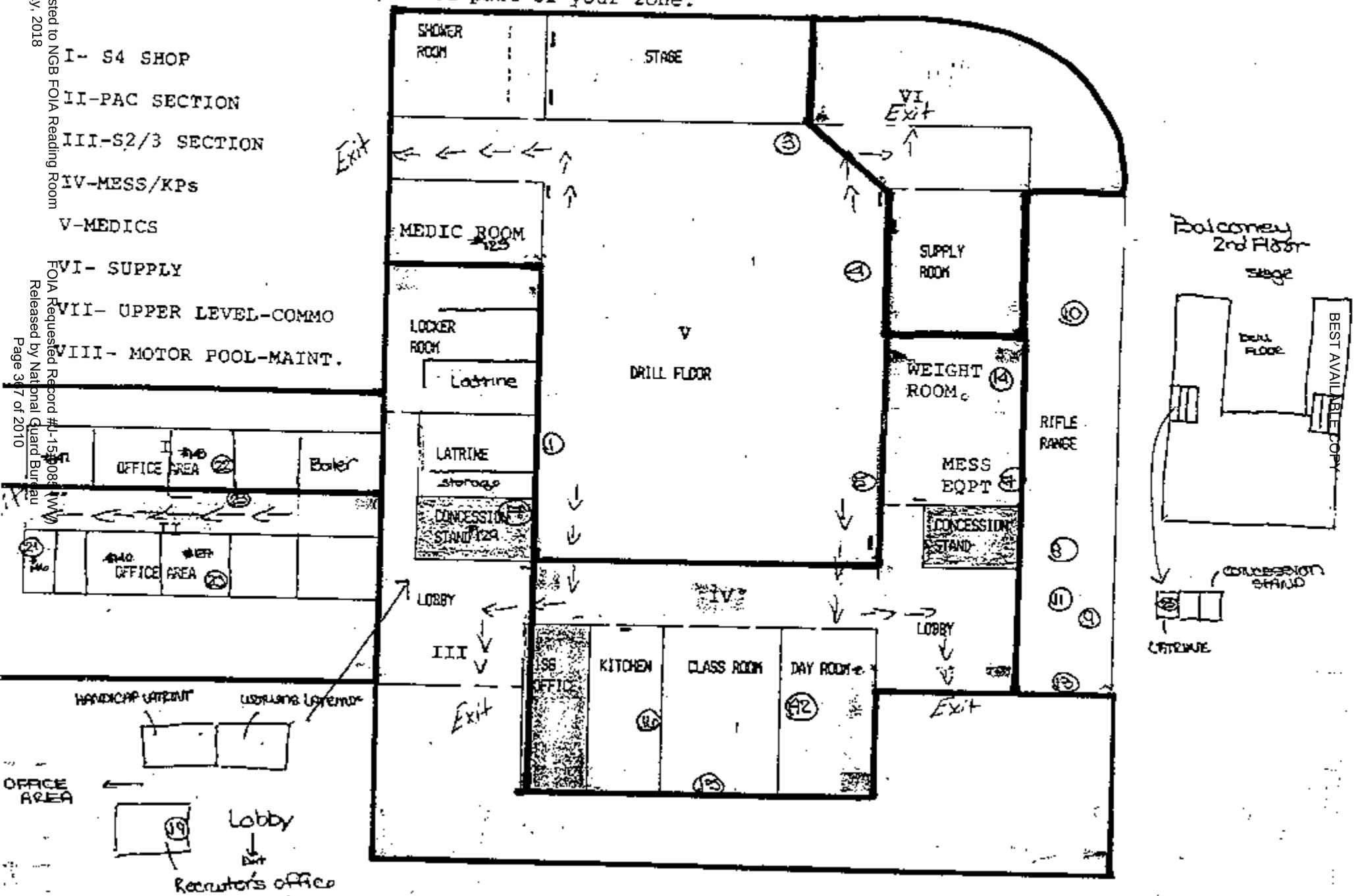
IV-MESS/KPs

V-MEDICS

VI- SUPPLY

VII- UPPER LEVEL-COMMO

VIII- MOTOR POOL-MAINT.



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVBLU338	**Chain Of Custody:**	121255
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Bluefield, WV	**Date Analyzed:**	12/15/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	15-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413520	WVBLU338-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	ug/ft²	
0413521	WVBLU338-2	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.9	ug/ft²	
0413522	WVBLU338-3	Furnace	Wipe	****	0.111	2.70	ug/ft²	6.3	ug/ft²	
0413523	WVBLU338-4	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0413524	WVBLU338-5	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.4	ug/ft²	
0413525	WVBLU338-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413526	WVBLU338-7	Furnace	Wipe	****	0.111	67.51	ug/ft²	150	ug/ft²	
0413527	WVBLU338-8	Furnace	Wipe	****	0.111	33.75	ug/ft²	74	ug/ft²	
0413528	WVBLU338-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	9.9	ug/ft²	
0413529	WVBLU338-10	Flame	Wipe	****	0.111	108.01	ug/ft²	71000	ug/ft²	
0413530	WVBLU338-11	Flame	Wipe	****	0.111	108.01	ug/ft²	4600	ug/ft²	
0413531	WVBLU338-12	Furnace	Wipe Blank	****	N/A	0.30	ug	0.74	ug	
0413532	WVBLU338-13	Flame	Wipe	****	0.111	108.01	ug/ft²	620	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

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVBLU338	**Chain Of Custody:**	121255
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Bluefield, WV	**Date Analyzed:**	12/15/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	15-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

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

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: Non-Responsive

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4475 Forbes Blvd. • Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 459-2643

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAPOR329-A1 through WVWIL335-A3
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-6027
DCL Sample ID No.:	03-35454 through 03-35502
Sample Receipt Date:	12/11/2003
Preparation Date:	12/15/03
Analysis Date:	12/15/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VAPOR329-A1	03-35454	362.12	ND	<0.003
VAPOR329-A2	03-35455	355.29	ND	<0.003
VAPOR329-A3	03-35456	0	ND	-
VAVIR329-A1	03-35462	241.75	ND	<0.004
VAVIR329-A2	03-35463	239.35	ND	<0.004
VAVIR329-A3	03-35464	0	ND	-
WVWAL338-A1	03-35466	255.30	ND	<0.004
WVWAL338-A2	03-35467	246.10	ND	<0.004
WVWAL338-A3	03-35468	0	ND	-
WVBLU338-A1	03-35470	340.39	ND	<0.003
WVBLU338-A2	03-35471	326.60	ND	<0.003
WVBLU338-A3	03-35472	0	ND	-
VAGAT337-A1	03-35473	243.02	ND	<0.004
VAGAT337-A2	03-35474	254.11	ND	<0.004
VAGAT337-A3	03-35475	0	ND	-
VAHAM330-A1	03-35476	250.47	ND	<0.004
VAHAM330-A2	03-35477	255.99	ND	<0.004
VAHAM330-A3	03-35478	0	ND	-
VABIG336-A1	03-35479	343.24	ND	<0.003
VABIG336-A2	03-35480	307.31	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		96.	
% Recovery	LCS 2		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive
Analyst

Non-Responsive
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VABIG336-A3	03-35481	0	ND	-
WVHIN339-A1	03-35486	238.94	ND	<0.004
WVHIN339-A2	03-35487	237.41	ND	<0.004
WVHIN339-A3	03-35488	0	ND	-
WVMON335-A1	03-35489	283.66	ND	<0.004
WVMON335-A2	03-35490	288.02	ND	<0.003
WVMON335-A3	03-35491	0	ND	-
WVRIC339-A1	03-35495	299.70	ND	<0.003
WVRIC339-A2	03-35496	296.83	ND	<0.003
WVRIC339-A3	03-35497	0	ND	-
VACED337-A1	03-35498	243.02	ND	<0.004
VACED337-A2	03-35499	254.11	ND	<0.004
VACED337-A3	03-35500	0	ND	-
WVWIL335-A1	03-35501	247.64	ND	<0.004
WVWIL335-A2	03-35502	0	ND	-
WVWIL335-A3	03-35503	252.18	ND	<0.004
	Prep Blank		ND	
% Recovery	LCS 3		101.	
% Recovery	LCS 4		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory	**Location:**	Bluefield
	Date:	12/4/2003

Sample 1

Sample Number: WVBLU338-A1

Pump: 647615

	Pre Flow Rate	**Post Flow Rate**
	2.458	2.452
	2.466	2.438
	2.455	2.431
	2.451	2.44
Average	**2.458**	**2.440**

Average Pre and Post	**2.4489**
Time 1	13:13
Time 2	15:32
Total Time Sampled	**2:19**
Minutes Sampled	139.00
Volume	**340.39 Liters**

Sample 2

Sample Number: WVBLU338-A2

Pump: 648339

	Pre Flow Rate	**Post Flow Rate**
	2.416	2.426
	2.417	2.434
	2.412	2.424
	2.409	2.416
Average	**2.414**	**2.425**

Average Pre and Post	**2.4193**
Time 1	13:16
Time 2	15:31
Total Time Sampled	**2:15**
Minutes Sampled	135.00
Volume	**326.60 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Bluefield
Date: 12/4/09

Sample 1
Sample Number: WVBLU338-R1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2458	2452
	2466	2438
Average	2455	2431
Average Pre and Post	2431 / 2458	2440 / 2440

Time 1 1313
Time 2 1532
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2
Sample Number: WVBLU338-R2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2416	2426
	2417	2434
Average	2412	2429
Average Pre and Post	2409 / 2419	2416 / 2425

Time 1 1316
Time 2 1521
Total Time Sampled
Minutes Sampled

Volume **Liters**

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Bluefield Readiness Center
2915 Old Barnwell Road
Bluefield, West Virginia 24701

AECOM
December 2012
Document No.: 60275401.1/Bluefield Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Bluefield Readiness Center
2915 Old Barnwell Road
Bluefield, West Virginia

Non-Responsive
Industrial Hygienist

Non-Responsive
Project Manager

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Bluefield Readiness Center

Contents

List of Appendices

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Executive Summary

On October 18, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Bluefield Readiness Center facility located at 2915 Old Barnwell Road in Bluefield, West Virginia. Non-[redacted], MAJ was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Bluefield Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Bluefield Readiness Center is currently staffed by twelve personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and an Assembly/Drill Hall.

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

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

The Bluefield Readiness Center is housed in a one-story masonry building, and consists of approximately 50% administrative space and 50% Assembly Hall.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust throughout the facility did not indicate lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Bluefield Readiness Center at the time of the survey.

No visible damaged friable suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed at the Bluefield Readiness Center.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a boiler room that feeds radiant heaters throughout the building. However, there is an HVAC system that cools the supply room which adjoins the Assembly Hall. There is no HVAC system for the remaining sections of the facility that provides fresh air from the building exterior into administrative areas.

1.0 Facility Description and Operations

The Bluefield Readiness Center, constructed in 1964, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The one-story administrative portion of the facility consists primarily of offices and administrative areas, and is finished with sheetrock walls, lay-in ceiling tiles and floor tile. The Assembly/Drill Hall is uniquely constructed in a clover leaf shape area, is finished with painted block walls and a concrete floor. According to site personnel there is a fire range located along one side of the Assembly Hall that was decommissioned and subsequently remediated in mid-1980 into a storage room. A gun/parts solvent cleaning station was observed in the former indoor fire range which is currently used primarily for storage/service bay. According to on-site personnel, the cleaning station is empty and has not been used for several years.

The primary activity at the Bluefield Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is frequently rented out for civic activities such as concerts, high school graduations, banquets, group meetings, trade shows, expos, and to other related local groups and organizations. The Bluefield Readiness Center is currently staffed by twelve personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

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

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 001	Assembly Hall - table	<110 ug/ft^2
Pb – 002	Recruiter Office - desk top	<110 ug/ft^2
Pb – 003	Recruiter Office - cabinet	<110 ug/ft^2
Pb – 004	Administrative Corridor - floor	<110 ug/ft^2
Pb – 005	Former Fire Range - bullet trap area	<110 ug/ft^2
Pb – 006	Former Fire Range - stored item	<110 ug/ft^2
Pb – 007	Former Fire Range - floor	<110 ug/ft^2
Pb – 008	Assembly Hall - floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

The wipe samples collected throughout the facility did not detected levels of lead in excess of the ARNG action level of 200 micrograms per square foot (ug/ft^2). Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls and ceilings are coated with paint and appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint at the time of the survey.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Bluefield Readiness Center during this survey. Thermal system piping observed throughout the facility is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion at the time of the survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Bluefield Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Bluefield Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Former Fire Range	0.6	252	69.1	46.7
Physical Fitness Room	0.1	250	68.7	45.6
Assembly Hall	0.0	263	69.6	50.7
Classroom	0.0	293	71.3	47.2
Kitchen	0.0	307	71.7	48.9
Foyer	0.5	297	70.1	45.6
Locker Room	0.2	300	70.6	48.1

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Men's Restroom	0.0	309	71.2	47.6
Recruiter Office	0.6	549	71.0	50.9
Readiness NCO Office	0.6	570	71.6	46.6
Boiler Room	0.4	389	72.4	47.7
CO Office	0.0	425	71.9	46.9
Administrative Corridor	0.4	521	71.8	47.2
General Office Area	0.6	539	71.9	45.5

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Bluefield Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Bluefield Readiness Center is heated by a boiler that feeds a radiant heating system. However, there is an HVAC system that cools the supply room which adjoins the Assembly Hall. There is no HVAC system for the remaining sections of the facility that provides fresh air from the building exterior into administrative areas.

4.1.2 HVAC Maintenance

There was no active HVAC system observed for the Bluefield Readiness Center except for an independent HVAC system for the supply room. Building personnel reported that the boiler is inspected annually and any associated filters changed at least twice a year.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate with the exception of; Former Firing Range/Storage, Recruiter Office and the Boiler Room.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Former Fire Range/Storage	25.4	N	30
Physical Fitness Room	56.4	Y	30
Assembly Hall	178.4	Y	10
Classroom	156.2	Y	30
Kitchen	59.7	Y	50
Foyer	121.7	Y	10
Locker Room	9.4	Y	7
Men's Restroom	18.9	Y	5
Recruiter Office	10.3	N	50
Readiness NCO Office	59.3	Y	50
Boiler Room	25.4	N	30
CO Office	74.5	Y	50
Administrative Corridor	71.2	Y	5
General Office Area	120.6	Y	50
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Bluefield Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Bluefield Readiness Center.

AECOM did not observe any damaged, friable suspect asbestos-containing materials at the Bluefield Readiness Center.

AECOM did not observe peeling lead-based paint at the Bluefield Readiness Center.

AECOM did not observe evidence of water intrusion at the Bluefield Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005 with the exception of; Former Firing Range/Storage, Recruiter Office and the Boiler Room.

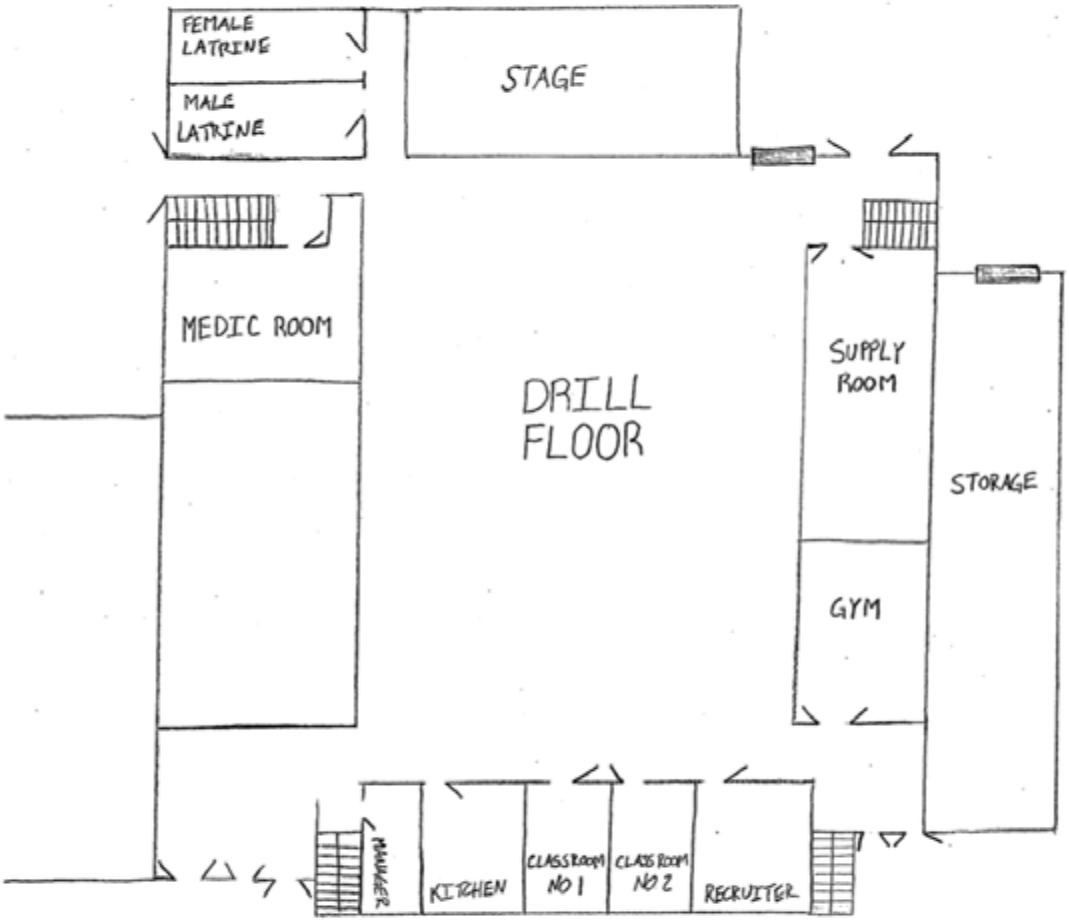
AECOM provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This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

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

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

Appendix A

Bluefield Readiness Center Facility Layout



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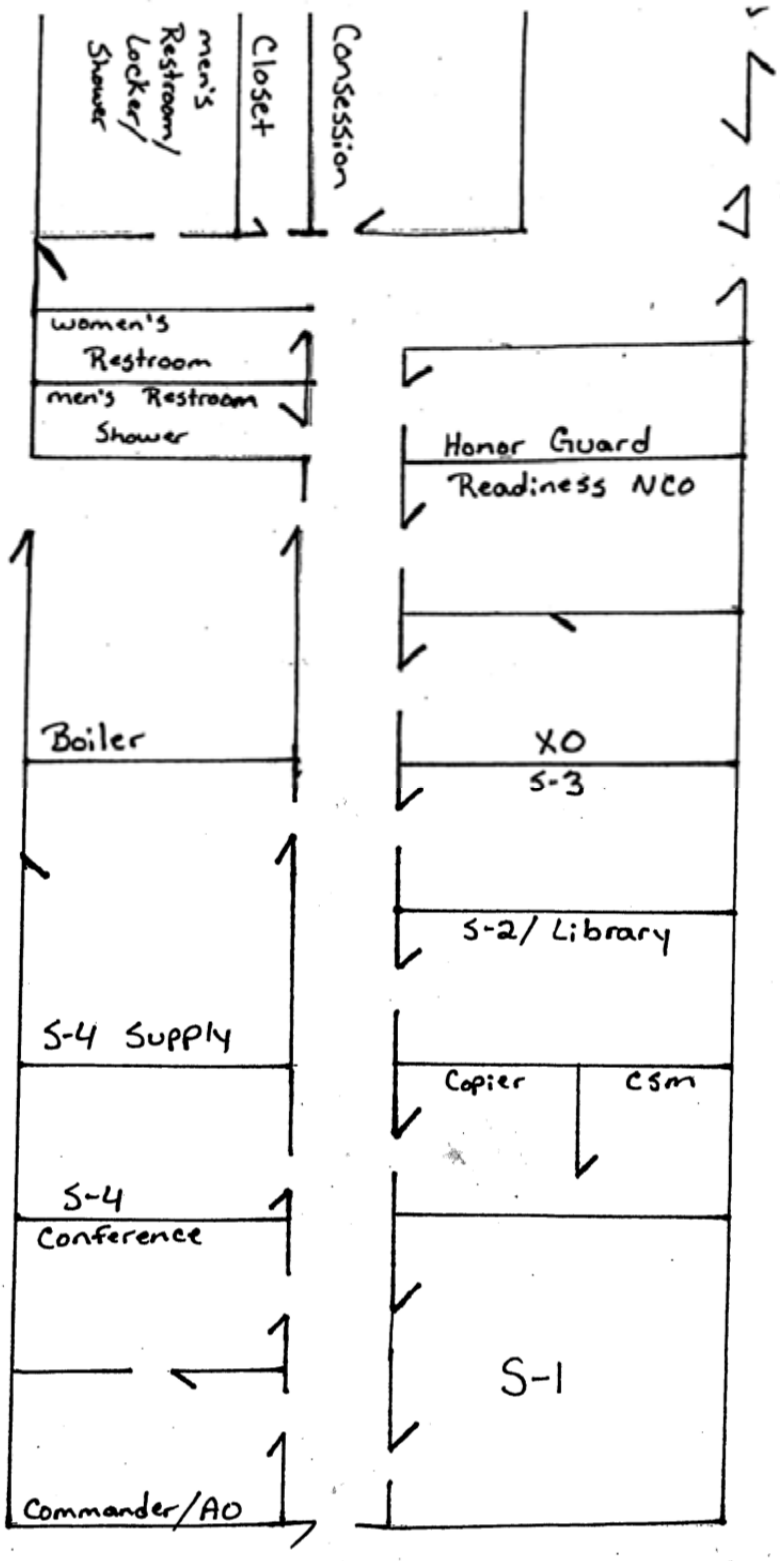

Appendix B

Bluefield Readiness Center Photographs

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Photograph 1

View of Building Exterior

Photograph 2

View of Recruiter Office

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Photograph 3

Parts/Gun Solvent Cleaning Station

Photograph 4

View of Former Gun Range

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Photograph 5

View of Former Bullet Trap Area

Photograph 6

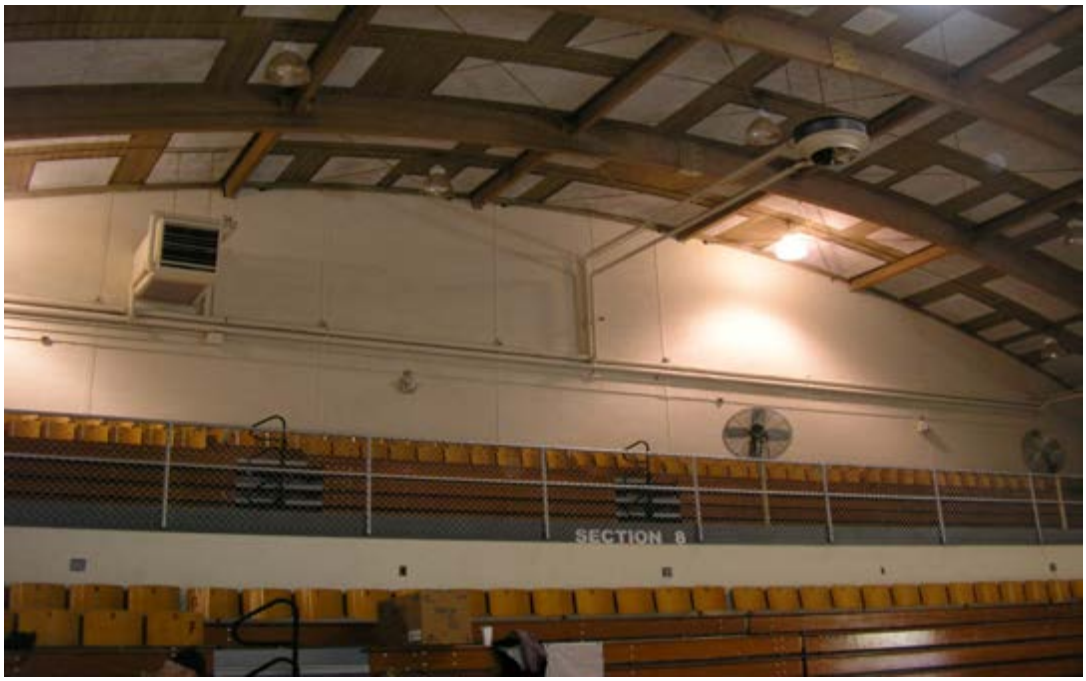
View of Physical Fitness Room

AECOM

Photograph 7

View of Assembly Hall

Photograph 8



View of Assembly Hall HVAC System

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Photograph 9

MSDS Information Station

Photograph 10

View of Kitchen

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Photograph 11

View of Locker Room

Photograph 12

Administrative Corridor

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Photograph 13

Office Area with suspect ACM Flooring

Appendix C

Analytical Results

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Bluefield/Brush Fork RC	Chain Of Custody:	514254		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-9003	Date Analyzed:	10/26/2012	Report Date:	10/30/2012

Attention: Non-R [redacted] i

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
13007999	Pb-001	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008000	Pb-002	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008001	Pb-003	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008002	Pb-004	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008003	Pb-005	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008004	Pb-006	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008005	Pb-007	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008006	Pb-008	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Bluefield/Brush Fork RC	Chain Of Custody:	514254		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Analyst: Non-Responsive

Technical Manager: Non-Responsive

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514254

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

Submittal Information:
1. Job Name: Duefield/Brush Fork RC
2. Job Location: West Virginia
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: [redacted]
5. Submitted by: AECOM (Signature) [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day turnaround to contracts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☑ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☑ 5 Day +	☑ Email [redacted] @aecom.com
Comments:	☐ 2 Day Date Due: 10/31/12	☐ Fax: [redacted] @us.army.mil
		☐ Verbal: [redacted] @us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM_(Qual) PLM_(Quan) PLM/TEM_(Qual) PLM/TEM_(Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

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

Metals Analysis
☐ Pb Paint Chip (QTY)
☐ *Pb Dust Wipe (wipe type 9001.8) (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Trap/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

SAMPLE INFORMATION CLIENT ID #	SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS TEM	PCM	PLM	LEAD	MOLD	MATRIX AIR	BULK	DUST	WATER (DW, GW, WW)	STONE (WIPE)	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY) Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/30/12 @ 0930 Via: FedEx By (Print): [redacted] Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/16/12
Job Number: 60275401
Contact Pers: Non-Responsiv

Job Name: Bluefield/Brush Fork RC
Job Location: West Virginia
Address: 2915 old Barnwell Rd
Bluefield, WV

Company: AECOM
Phone Number: 3154320575
Collected By: Non-Responsi
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Dusty surface	1/in^2	Ghost Wipe
Pb-002	OFFICE	Desk		
Pb-003	OFFICE	Cabinet		
Pb-004	Corridor	Floor		
Pb-005	Former Range	Bullet Trap		
Pb-006	"	stored item		
Pb-007	"	Floor		
Pb-008	Outside Range	Floor	⇓	⇓
~~Pb-009~~	(01)			

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

AECOM

References

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

2. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998. http://www.dtic.mil/whs/directives/corres/pdf/605501p.pdf

3. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, 15 February 1990. http://armypubs.army.mil/epubs/pdf/R11_34.PDF

4. AR 40-5, Medical Service, Preventive Medicine, 25 May 2007. http://armypubs.army.mil/epubs/pdf/R40_5.PDF

5. AR 385-10, The Army Safety Program, 23 August 2007; Rapid Action Revision (RAR) issue date: 4 October 2011. http://armypubs.army.mil/epubs/pdf/R385_10.PDF

6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://armypubs.army.mil/epubs/pdf/P40_501.pdf

7. AR 40-11, Preventive Medicine, 22 July 2005, RAR issue date: 19 October 2009. http://armypubs.army.mil/epubs/pdf/p40_11.pdf

8. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000. http://armypubs.army.mil/epubs/pdf/P40_503.PDF

9. UFC 3-410-01FA, Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4, January 2010. http://www.wbdg.org/ccb/DOD/UFC/ufc_3_410_01fa.pdf

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

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

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

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

14. ANSI/ASHRAE 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

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

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

17. OSHA Instruction Letter 02-02-058, Lead Exposure in Construction, Office of Health Compliance Assistance, 13 December 1993.

18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

19. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006. http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 15 July 2004

MEMORANDUM FOR WVARNG, Charleston Readiness Center, , 1703 Coonskin Drive, Charleston, WV 25311

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive [redacted]

Encl

Regional Industrial Hygienist

CF: OHM, MAJ Non-Responsive [redacted]

National Guard Armory
Charleston (1701/1703 Coonskin Drive) Readiness Center, Charleston, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall and the caretaker's room of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the drill/assembly area and kitchen should be thoroughly cleaned. **RAC - 4**
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, the first floor of building 1701 in the caretakers office and former PX Room (adjacent to the lobby to the assembly/drill hall), on the first floor of building 1703 in office 103, and the converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Materials (floor tiles, ceiling material, and pipe insulation) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials. **RAC - 5**
- Visual mold was observed in the armory. The areas where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it. **RAC - 5**
- Interviews revealed that employees experienced headaches and possibly allergies in response to a mold related air quality concern in offices 200, 204, and 206 located on the second floor of Building 1703. It is recommended that the area where the mold is located should be thoroughly cleaned (see above). In addition, a lack of ventilation concern was expressed in the forms and publications room located on the first floor of

Building 1701. It is recommended that fans be used to aid in air circulation in this room. **RAC - 5**

- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore, consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible. **RAC - 4**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE	OTSG APPROVED (Date)
WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD	

DIRECTORATE Charleston Armory BLDG/ROOM Charleston

SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study

JOB DESCRIPTION/SERIES Military/Administrative Operations

SAMPLING DATE November 18, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.003	<0.003	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Michele Seman/Industrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility)

NAME: Non-Responsive SFC: 11/18/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: (Last Four # Non-R		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-561-6341		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 1 MAY 74 4700

HSXR-APG-Z OP 32 1 Jan 90

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

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1. Lead	P	0.05 mg/m^3	<0.003	<0.003	1
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7.					
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*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Michele Seman/Industrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility)				
NAME: Non-R [redacted] R.: SFC: 11/18/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: (Last Four # Non-Respo		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-561-6341		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 4700
1 MAY 78
HSXR-APG-Z OP 32 1 Jan 90

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Charleston (1701/1703 Coonskin Drive) Readiness Center – Charleston, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Charleston (1701/1703 Coonskin Drive) Readiness Center – Charleston, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive [redacted] _____
Industrial Hygienist

Reviewed by: Non-Responsive [redacted] _____
Business Line Manager

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List of Tables

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Charleston (1701/1703 Coonskin Drive) Readiness Center in Charleston, West Virginia. Non-Responsive performed the evaluation on 18 November 2003. The point of contact at the readiness center was caretaker Chuck Westfall. Please note that buildings 1701 and 1703 are adjoined, therefore the survey was conducted as if the buildings were one facility.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Water Damage
- Housekeeping

- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall and the caretaker's room of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the drill/assembly area and kitchen should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, the first floor of building 1701 in the caretakers office and former PX Room (adjacent to the lobby to the assembly/drill hall), on the first floor of building 1703 in office 103, and the converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles, ceiling material, and pipe insulation) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Visual mold was observed in the armory. The areas where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- Interviews revealed that employees experienced headaches and possibly allergies in response to a mold related air quality concern in offices 200, 204, and 206 located on the second floor of Building 1703. It is recommended that the area where the mold is located should be thoroughly cleaned (see above). In addition, a lack of ventilation concern was expressed in the forms and publications room located on the first floor of

Building 1701. It is recommended that fans be used to aid in air circulation in this room.

- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore, consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Charleston (1701/1703 Coonskin Drive) Readiness Center in Charleston, West Virginia. Non-Responsive performed the evaluation on 18 November 2003. The point of contact at the readiness center was caretaker Non-Responsive Please note that buildings 1701 and 1703 are adjoined, therefore the survey was conducted as if the buildings were one facility.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any results above recommended levels from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at three locations. The samples collected from the top surfaces of two fire extinguisher cabinets in the assembly hall had lead concentrations of 800 and 1100 $\mu g/ft^2$, respectively. In addition, the sample collected from the desktop in the caretaker's room had a lead concentration of 440$\mu g/ft^2$. It is recommended that these surfaces and the immediate areas around these surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-15 (*Guidelines and Procedures for Indoor Firing Range (IFR) Rehabilitation, Conversion, and Cleaning*). In addition, any other dusty/dirty areas in the assembly/ drill hall and caretaker's room should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, the first floor of building 1701 in the caretakers office and former PX Room (adjacent to the lobby to the assembly/drill hall), on the first floor of building 1703 in office 103, and the converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. Suspected asbestos containing materials in the forms of floor tiles, ceiling material, and pipe insulation on pipe elbows and joints were observed in the rooms of Building 1703. Exact measurements of the asbestos contains materials in building 1703 are unavailable due to time constraints of survey. As per caretaker Chuck Westfall, the ceilings are scheduled for abatement. Floor tiles (approximately 457 square feet) and pipe insulation (14 pipe elbows and joints) were observed in office 128 of Building 1703. Pipe insulation was observed in the old PX in Building 1701

(approximately 29 elbows and joints). Please note that the building has drop down ceilings and it is assumed that suspected asbestos containing pipe insulation remains on pipe elbows and joints. The condition of all suspected asbestos containing materials observed was good (no rips, tears, or other damage).

An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. No water damage was observed, however, the inspection revealed possible mold in the classrooms and on the rug of adjoining offices 200, 204, and 206 of Building 1703.

The areas where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the source of the mold should be identified and actions taken to eliminate the source of the mold.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Measurements for temperature, carbon dioxide, and humidity revealed no indoor air quality concerns. However, interviews with employees revealed an air quality concern in offices 200, 204, and 206 of building 1703 where possible mold was observed on the rug of these adjoining rooms. The employees have experienced

headaches and allergies possible due to the mold exposure. It is recommended that the areas where the mold is located be thoroughly cleaned (see Section 2.2.3 above). In addition employees expressed a lack of ventilation concern in the forms and publications room of Building 1701. Please note that the room does not contain any windows. It is recommended that fan be used to aid in air circulation.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in a few areas, including room 128 and the forms and publications room located on the first floor of Building 1701, two offices located on the second floor of Building 1701, and office 204 located on the second floor of Building 1703. Please note that the lighting in office 106 located on the first floor of Building 1703 did not meet the minimum requirements; however, additional lighting meeting minimum requirements is provided at the desk areas in the office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Range (Building 1740)

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The firing range was converted into a storage room. The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- light fixture at 4900 micrograms lead per square foot ($\mu g/ft^2$);
- stored item at 8.9 $\mu g/ft^2$;
- floor at 470 $\mu g/ft^2$; and
- floor outside the range at 6.5 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in NG PAM 385-15 (*Guidelines and Procedures for Indoor Firing Range (IFR) Rehabilitation, Conversion, and Cleaning*). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of

cleaning, please refer to NG PAM 385-15 (*Guidelines and Procedures for Indoor Firing Range (IFR) Rehabilitation, Conversion, and Cleaning*). It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

2.9. HVAC System

The maintenance schedule for the HVAC system was evaluated to verify that maintenance occurs on a regular basis. Also, the condition of the HVAC system was evaluated to determine if the maintenance performed is effective. It was deemed that maintenance occurs on a regular basis, and the maintenance performed is effective.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, water damage, housekeeping, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, visible mold, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory – Charleston (1701/1703 Coonskin Drive)
Charleston, West Virginia
Date of Sampling: 18 November 2003

Sample Number	Location	Results, µg/ft[2] [a]
WV1CH322-1	Assembly room – fire extinguisher cabinet top surface (See Building Layout – Appendix B)	800
WV1CH322-2	Assembly room – electrical control box top surface (See Building Layout – Appendix B)	46
WV1CH322-3	Assembly room – fire alarm switch control box top surface (See Building Layout – Appendix B)	35
WV1CH322-4	Assembly room – fire alarm switch control box top surface (See Building Layout – Appendix B)	57
WV1CH322-5	Assembly room – fire extinguisher cabinet top surface (See Building Layout – Appendix B)	1100
WV1CH322-6	Field Blank	< 0.3 µg
WV1CH322-11	Building 1701 First Floor – Room 128– desktop	2.9
WV1CH322-12	Field Blank	0.39 µg
WV1CH322-13	Building 1701 First Floor – Hallway – electrical control box top surface	5.9
WV1CH322-14	Building 1701 First Floor – Kitchen – microwave top surface	3
WV1CH322-15	Building 1701 First Floor – Lobby – heater vent top surface	5.5
WV1CH322-16	Building 1701 First Floor – Caretaker's Office – desktop	440
WV1CH322-17	Building 1701 First Floor – Hallway – heater vent top surface	5.9
WV1CH322-18	Field Blank	0.38 µg
WV1CH322-19	Building 1701 First Floor – Office 110 – computer monitor top surface	5.1
WV1CH322-20	Building 1701 First Floor – Women's Restroom – paper towel dispenser top surface	4.1
WV1CH322-21	Building 1701 First Floor – Office 107 (STARBASE) – stereo top surface	3.1
WV1CH322-22	Building 1701 First Floor – Kitchen (STARBASE) – window sill	19

[a] Micrograms lead per square foot

Table 1 (Continued)
Wipe Sampling for Lead
National Guard Armory – Charleston (1701/1703 Coonskin Drive)
Charleston, West Virginia
Date of Sampling: 18 November 2003

Sample Number	Location	Results, µg/ft² [a]
WV1CH322-23	Building 1701 First Floor – Room 111 – television top surface	4.6
WV1CH322-24	Field Blank	< 0.3 µg
WV1CH322-25	Building 1701 First Floor – Room 102 (Classroom) - window sill	5.8
WV1CH322-26	Building 1701 First Floor – CAD Room (lobby) - table top surface	7.7
WV1CH322-27	Building 1701 First Floor – Weight Room – stereo system top surface	15
WV1CH322-28	Building 1701 First Floor – Former PX Room (adjacent to Lobby to Drill Hall) – heater vent top surface	100
WV1CH322-29	Building 1701 First Floor - Lobby adjacent to Drill Hall - heater vent top surface	5.7
WV1CH322-30	Field Blank	< 0.3 µg
WV1CH322-31	Building 1701 First Floor - Forms and Publication Room computer monitor top surface	4
WV1CH322-32	Building 1701 First Floor - Halfway to mailroom – serving counter top surface	3.8
WV1CH322-34	Building 1701 First Floor	13
WV1CH322-35	Building 1701 Second Floor – Office - book shelf top surface	5.1
WV1CH322-36	Field Blank	0.41 µg
WV1CH322-37	Building 1701 Second Floor – HR (Training) Room computer monitor top surface	2.9
WV1CH322-38	Building 1701 Second Floor - Room 159 – typewriter top surface	7.5
WV1CH322-39	Building 1701 Second Floor – System Manager Room - bookshelf top surface	3.6

[a] Micrograms lead per square foot

Table 1 (Continued)
Wipe Sampling for Lead
National Guard Armory – Charleston (1701/1703 Coonskin Drive)
Charleston, West Virginia
Date of Sampling: 18 November 2003

Sample Number	Location	Results, µg/ft² [a]
WV1CH322-40	Building 1701 Second Floor – Office – filing cabinet top surface	4.1
WV1CH322-41	Building 1701 Second Floor – Office – desktop	4.4
WV1CH322-42	Building 1701 Second Floor – Office – heater vent top surface	3.7
WV1CH322-43	Field Blank	0.34 µg
WV1CH322-44	Building 1701 Second Floor – Hallway – heater vent top surface	3.2
WV1CH322-45	Building 1701 Second Floor – Office – desktop	7
WV1CH322-46	Building 1701 Second Floor – Mail Area – VCR top surface	3.7
WV1CH322-47	Building 1701 Second Floor – Office – desktop	4
WV1CH322-48	Field Blank	0.43 µg
WV1CH322-49	Building 1701 Second Floor – Office – bookshelf	3.1
WV1CH322-50	Building 1701 Second Floor – Main Area – typewriter table top surface	8.5
WV1CH322-51	Building 1701 Second Floor – Office – cabinet door top surface	7
WV1CH322-52	Building 1701 Second Floor – Office – heater vent top surface	3.6
WV1CH322-53	Building 1701 Second Floor – Office – heater vent top surface	4.4
WV1CH322-54	Field Blank	0.31 µg
WV1CH322-55	Building 1701 Second Floor – Office – computer monitor top surface	3.7
WV1CH322-56	Building 1701 Second Floor – Office – desktop	< 2.7
WV1CH322-57	Building 1703 First Floor – Room 103 – desk shelf top surface	55

[a] Micrograms lead per square foot

Table 1 (Continued)
Wipe Sampling for Lead
National Guard Armory – Charleston (1701/1703 Coonskin Drive)
Charleston, West Virginia
Date of Sampling: 18 November 2003

Sample Number	Location	Results, µg/ft²[a]
WV1CH322-58	Building 1703 First Floor - Production Area -- table top surface	5.4
WV1CH322-59	Building 1703 First Floor Room 139 desk shelf top	5.5
WV1CH322-60	Field Blank	0.37 µg
WV1CH322-61	Building 1703 First Floor - Room 106 - cabinet top surface	3.5
WV1CH322-62	Building 1703 First Floor Women's Latrine -- heater vent top surface	< 2.7
WV1CH322-63	Building 1703 Second Floor -- Lobby - mail cabinet top surface	3.3
WV1CH322-64	Building 1703 Second Floor Room 204 -- bookshelf surface	5.4
WV1CH322-65	Building 1703 Second Floor -- Room 213 heater vent top surface	4.9
WV1CH322-66	Field Blank	0.35 µg
WV1CH322-67	Building 1703 Second Floor - Office 210– desktop shelf surface	3.3
WV1CH322-68	Building 1703 Second Floor - Office 207 filing cabinet top surface	4.1

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory – Charleston (1701/1703 Coonskin Drive)
Charleston, West Virginia
Date of Sampling: 18 November 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WV1CH322-A1	Non-Responsive	0830-1040/130	2.4335	316.36	<0.003
WV1CH322-A2	Non-Responsive	0835-1040/125	2.5023	312.78	<0.003
WV1CH322-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3

Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory – Charleston (1701/1703 Coonskin Drive)
Charleston, West Virginia
Date of Sampling: 18 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Bldg. 1701 Forms and Publications	3	802	53.6	73.9
2nd Floor Bldg. 1701 - Office	1	1036	46.2	73.8
1st Floor Bldg. 1703 - Office 106	4	928	45.1	74.1
2nd Floor Bldg. 1703 Lobby	4	893	43.0	73.2
Outdoors	0	545	57.3	54.3

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4
Illumination Readings
National Guard Armory – Charleston (1701/1703 Coonskin Drive)
Charleston, West Virginia
Date of Sampling: 18 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Building 1701 First Floor – Room 128	26.3-48.5	70	No
Building 1701 First Floor - Hallway	10.3-60.1	7.5	Yes
Building 1701 First Floor Office 110	65.3-109.1	70	Some Areas
Building 1701 First Floor Office 107	55.6-109.2	70	Some Areas
Building 1701 First Floor - Office 111	67.5-90.9	70	Some Areas
Building 1701 First Floor Classroom 102	78.3-168.2	70	Yes
Building 1701 First Floor Forms and Publications	20.1-62.5	70	No
Building 1701 Second Floor Office (location of Sample WVICH322-35)	34.9-69.2	70	No
Building 1701 Second Floor Office (location of Sample WVICH322-40)	84.7-107.1	70	Yes
Building 1701 Second Floor - Office (location of Sample WVICH322-41)	81.3-129.5	70	Yes
Building 1701 Second Floor Office (location of Sample WVICH322-52)	54.2-107.1	70	Some Areas
Building 1701 Second Floor - Office (location of Sample WVICH322-55)	39.5-69.8	70	No
Building 1703 First Floor Office 103	76.1-98.2	70	Some Areas
Building 1703 First Floor – Office 106	30.1-38.5	70	No*
Building 1703 First Floor - - Women's Latrine	10.5-60.1	30	Some Areas
Building 1703 Second Floor -- Office 204	29.2-40.1	70	No
Building 1703 Second Floor Office 210	57.6-85.1	70	Some Areas

[a] fc - Footcandles

* Additional lighting provided above desk/working areas

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory – Charleston (Building 1740 - 1701/1703 Coonskin Drive)

Charleston, West Virginia

Date of Sampling: 18 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVICH322-7	Light Fixture	4900
WVICH322-8	Stored Item	8.9
WVICH322-9	Floor	470
WVICH322-10	Floor Outside the Range	6.5

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Charleston Armory (West Virginia ARNG	Charleston (1701/1703 Coonskin drive)

OCATION/CODE	OPERATION/CODE
Administrative Areas/AA	Administrative Operations AOO

URVEY DATE	EVALUATOR (Initials)
18 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	CSI Non-Responsive

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
		4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
← unknown				→

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			EAR PLUGS W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video display terminal	3-low	D Uncontrolled Physical
7439-92-1	Lead, Inorganic dust and fumes as Pb	2-moderate	Uncontrolled Respirator
1332-21-4	Asbestos (other)	2-moderate	↓

SECTION 5. PERSONNEL DATA

Non-Responsive	MI	SEX	SSN	CATEGORY
	R		Non-Responsive	Mil
	R	F		Mil

SECTION 6. COMMENTS

No comments See attached sheet

Survey conducted by Wehrle Salmon Buildings contain military and civilians employees (employee list not avail also on date of survey. Employees perform mainly administrative functions. It should be noted that the STARBASE Program (children 8/days) is located in

PRIVACY ACT STATEMENT

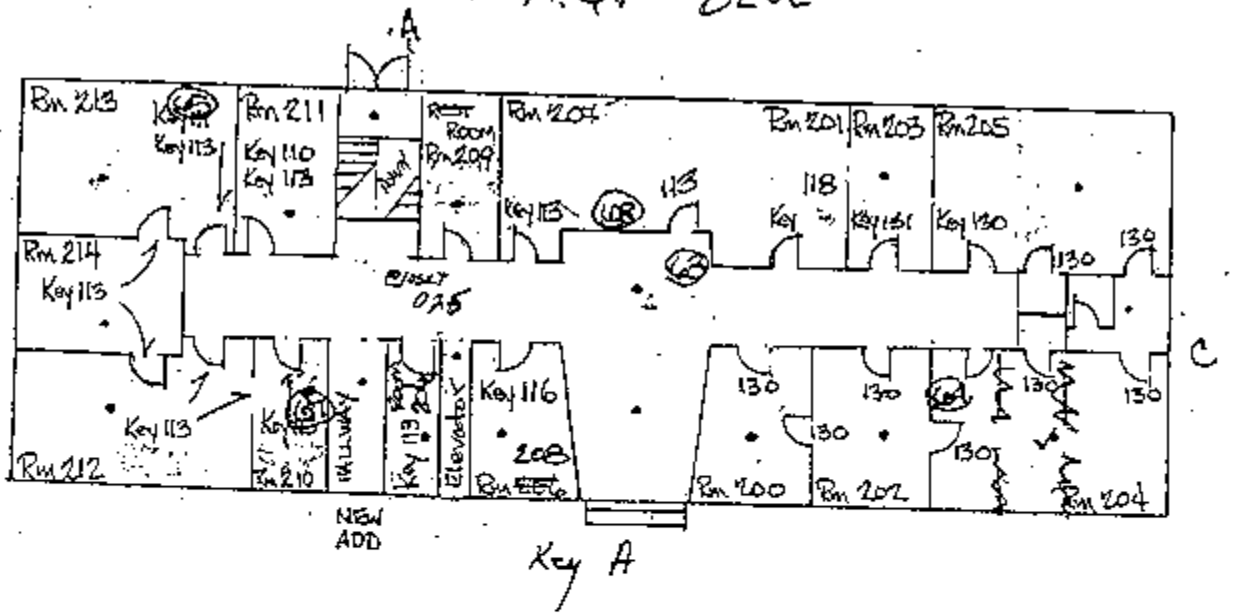
Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

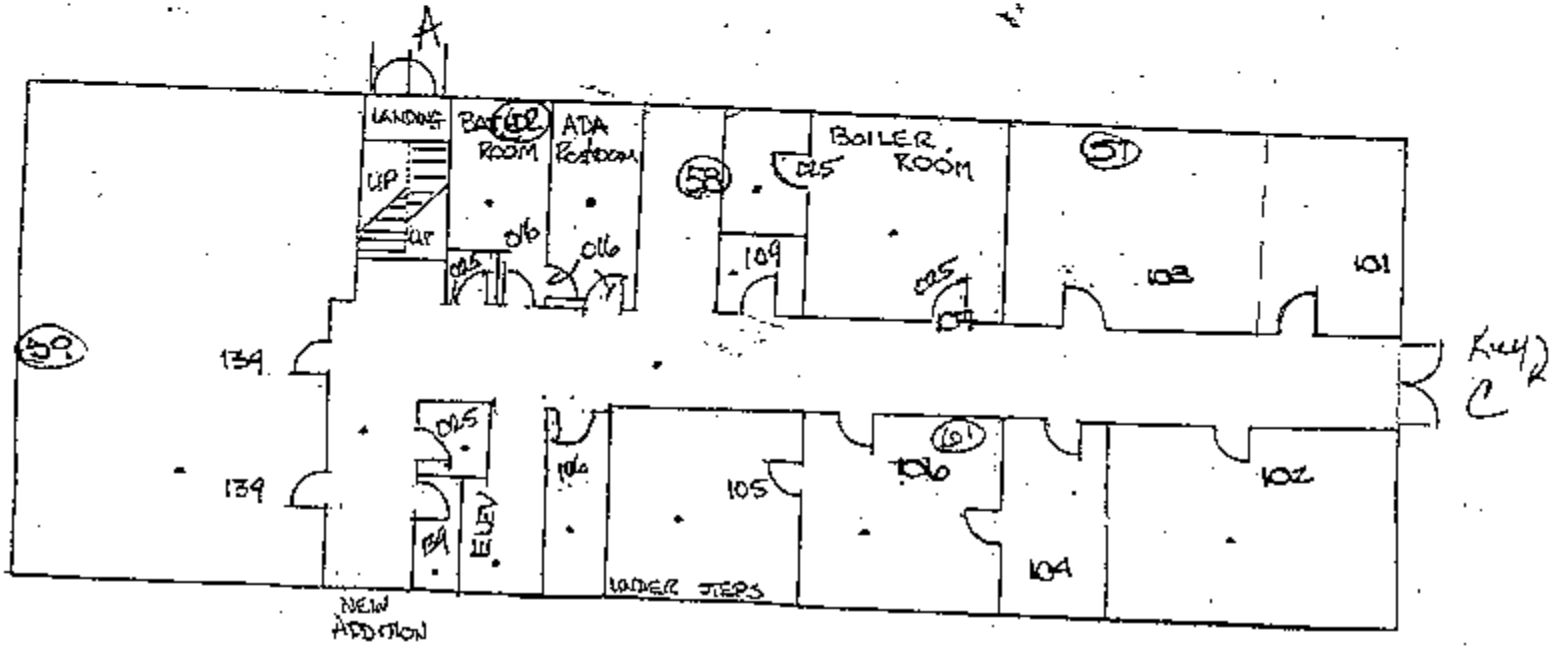
Building 1701 as well mold was found in building 1705 on rug in room 204.

Appendix B
Building Layout

2nd Floor 1100 Coonskin Drive
H.Q. BLDG



1st Floor H.Q. BLDG



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




Industrial Hygiene Survey for WVARNG – Charleston - Armory Readiness Center 1707 Coonskin Drive Charleston, West Virginia 25311

AECOM
December 2012
Document No.: 60275401/Charleston - Armory Readiness Center

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

Industrial Hygiene Survey for WVARNG – Charleston - Armory Readiness Center 1707 Coonskin Drive Charleston, West Virginia 25311

Non-Responsive
Industrial Hygienist

Non-Responsive
Project Manager

Non-Responsive
Northeast District Health & Safety Manager

AECOM Environment
December 2012
Document No.: 60275401/Charleston - Armory Readiness Center

AECOM

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Executive Summary

On October 18, 2012, AECOM Technical Services Northeast, Inc. (AECOM) conducted an Industrial Hygiene (IH) survey of the Charleston - Armory Readiness Center facility located at 1707 Coonskin Drive in Charleston, West Virginia. CPT Non-P[redacted] was the point of contact for the facility and building maintenance personnel accompanied AECOM during the survey to provide access and information concerning the Charleston - Armory Readiness Center operations.

The industrial hygiene survey was conducted in general accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Charleston - Armory Readiness Center is currently staffed by five personnel. The facility is configured as administrative areas, and an armory including a former firing range and a drill/assembly hall.

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

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

The Charleston - Armory Readiness Center is housed in a two story masonry building constructed in the mid 1960's, with the Headquarters section added in the mid 1970's.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the U.S. Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 micrograms per square foot (ug/ft^2) for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

No damaged suspect asbestos containing materials were observed during the evaluation.

No peeling paint was observed during the evaluation.

No evidence of water intrusion or suspect mold growth was observed during the evaluation.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a boiler room that feeds radiant heaters throughout the building as well as air handling units that provide fresh air to occupied spaces.

1.0 Facility Description and Operations

The Charleston - Armory Readiness Center is located in a two story building constructed in the mid 1960's, with the headquarters section added at the north end of the original building in the mid 1970's. The drill hall is located at the south end of the building. Most areas are finished block walls; acoustical drop ceilings, and floor tile.

The range has been converted to locker rooms and a fitness room at some time prior to the survey.

The primary activity at the Charleston - Armory Readiness Center is routine administrative duties. The Charleston - Armory Readiness Center is currently staffed by approximately five personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall, administrative areas, and in association with the former range following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost Wipes. Very little dust was observed on surfaces in the facility.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
HQ-01	Drill Hall Floor - North	<110 ug/ft^2
HQ-02	Drill Hall Floor - South	<110 ug/ft^2
HQ-03	Drill Hall – On top of Fire Extinguisher Cabinet	<110 ug/ft^2
HQ-04	Kitchen – Top of Refrigerator	<110 ug/ft^2
HQ-05	Corridor outside Locker Room – Supply Grille	<110 ug/ft^2
HQ-06	112 Caretaker - Desk	<110 ug/ft^2
HQ-07	Copy Area adjacent to 160 – Top of Cabinet	<110 ug/ft^2
HQ-08	Corridor Outside JAG - Floor	<110 ug/ft^2
HQ-09	Lobby Outside Office 207 – Supply Grille	<110 ug/ft^2
HQ-10	Locker Room(former Range) – Top of Locker	<110 ug/ft^2
HQ-11	Fitness Room(former Range) – On Equipment	<110 ug/ft^2
HQ-12	Fitness Room(former Range) – Floor	VOIDED sample
HQ-13	Outside former Range on Floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

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

None of the wipe samples were found to contain lead in excess of the action level of 200 micrograms per square foot (ug/ft^2) per NG-PAM 420-15. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. AECOM did not observe peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos-containing materials (ACM) in readily accessible areas of the Charleston - Armory Readiness Center during this survey.

Typical miscellaneous building materials observed but not sampled include floor tiles and associated mastic, drywall, fiberglass pipe insulation, cove base and associated mastic, and ceiling tiles.

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion or suspect mold growth during this evaluation.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section contains general office space. The administration section is generally utilized by all of the Charleston - Armory Readiness Center staff members. No Indoor Air Quality concerns were noted by the Charleston - Armory Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. All readings were within acceptable guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Outside - Baseline	0.7	430	70.7	46.6
Custodial Office	1.3	764	70.3	52.5
Office 106	1.3	808	71.4	51.9
Conference 126	1.2	555	70.6	49.8
Drill Hall	0.4	528	71.6	46.9
HR Offices	0.9	797	71.6	49.4
Office 207	1.2	709	71.0	43.8

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

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

No potential for contamination of clean air sources was observed at the facility.

AECOM did not observe any obvious indications of maintenance issues with the general ventilation system from readily accessible areas. Percentage of outside air supplied by the HVAC system was calculated using CO_2 levels, and was determined to be approximately 42%, using the ASHRAE formula $\%OA=((C_{RA}-C_{SA})/(C_{RA}-C_{OA}))X100$, where C_{RA}=620 ppm CO_2, C_{SA}=539 ppm CO_2, and C_{OA}=430 ppm CO_2. Based on the carbon dioxide levels observed inside the building during this assessment, there is appears to be a sufficient quantity of outside air being delivered via the HVAC system in order to satisfy the occupant load.

Very little dust was observed at diffusers, and site personnel indicated that the system seems to work well. Temperature readings were constant in all areas occupied by readiness center personnel.

4.1.2 HVAC Maintenance

Maintenance is reportedly performed on the HVAC system quarterly. Very little dust was observed on supply grilles in the facility.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in all areas. Mapped lighting levels are presented on the building layout in Appendix A.

Table 5-1: Light Survey

Location	Results (Foot candles)	Met Standard (Y/N)	Standard*
Lower level offices	53.6-169.3	Y	50
Upper level offices	53.4-155.6	Y	50
Drill Hall	37-160	Y	30
Kitchen	54.5	Y	50
Corridors	26.2-112.5	Y	5
Rest rooms	23.6-3K+	Y	5
Fitness Room	54.3	Y	30
Locker Room	82.7	Y	7
Conference Room	77.1	Y	30
Boiler Room	31.8	Y	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI/IESNA RP-7-01)			

6.0 Evaluation of Attached Garage

There is no garage associated with the Charleston - Armory Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Charleston - Armory Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

No damaged suspect asbestos containing materials were observed during the evaluation.

No peeling paint was observed during the evaluation.

No evidence of water intrusion or suspect mold growth was observed during the evaluation.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a boiler room that feeds radiant heaters throughout the building as well as air handling units that provide fresh air to occupied spaces.

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

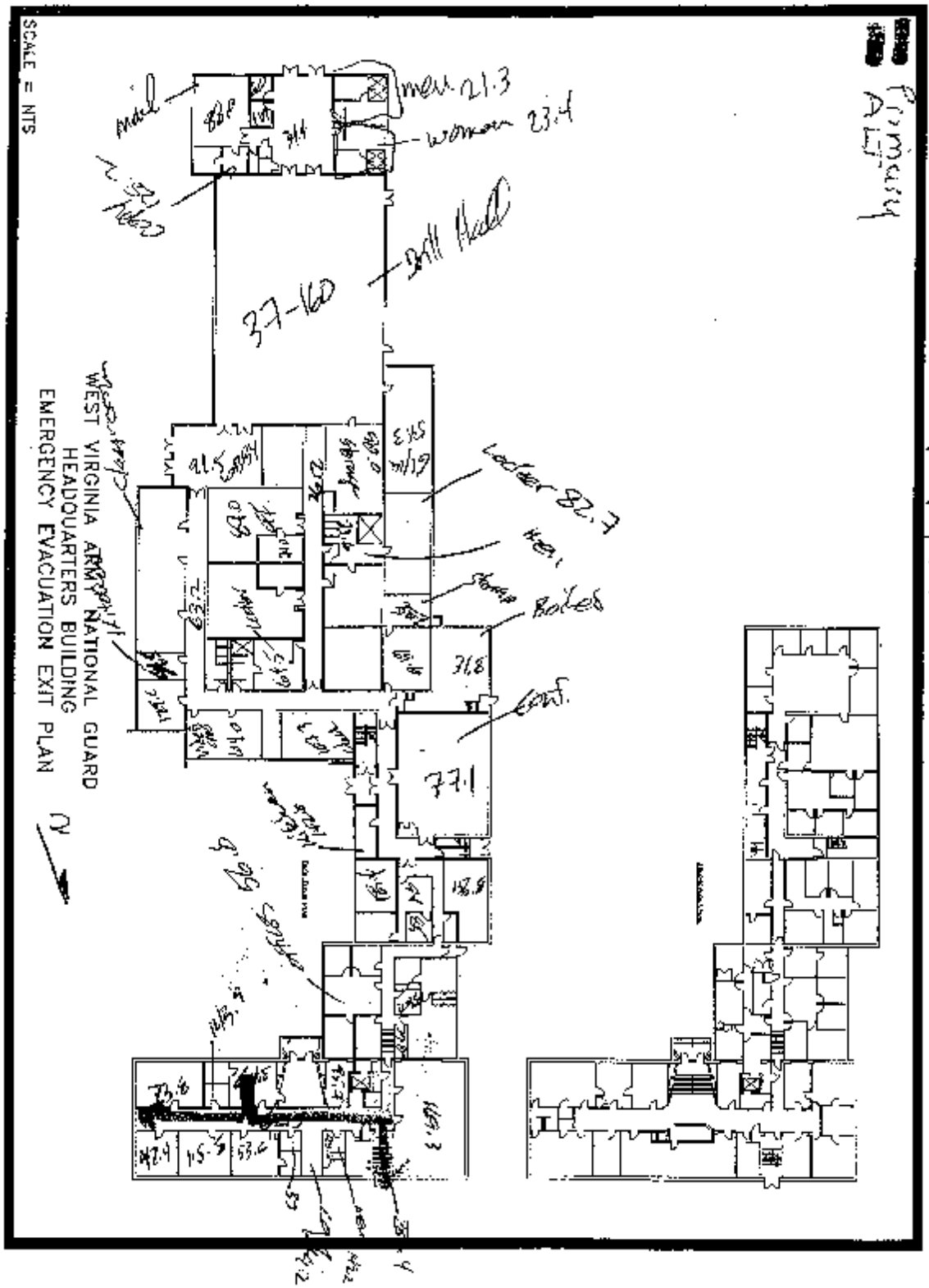
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

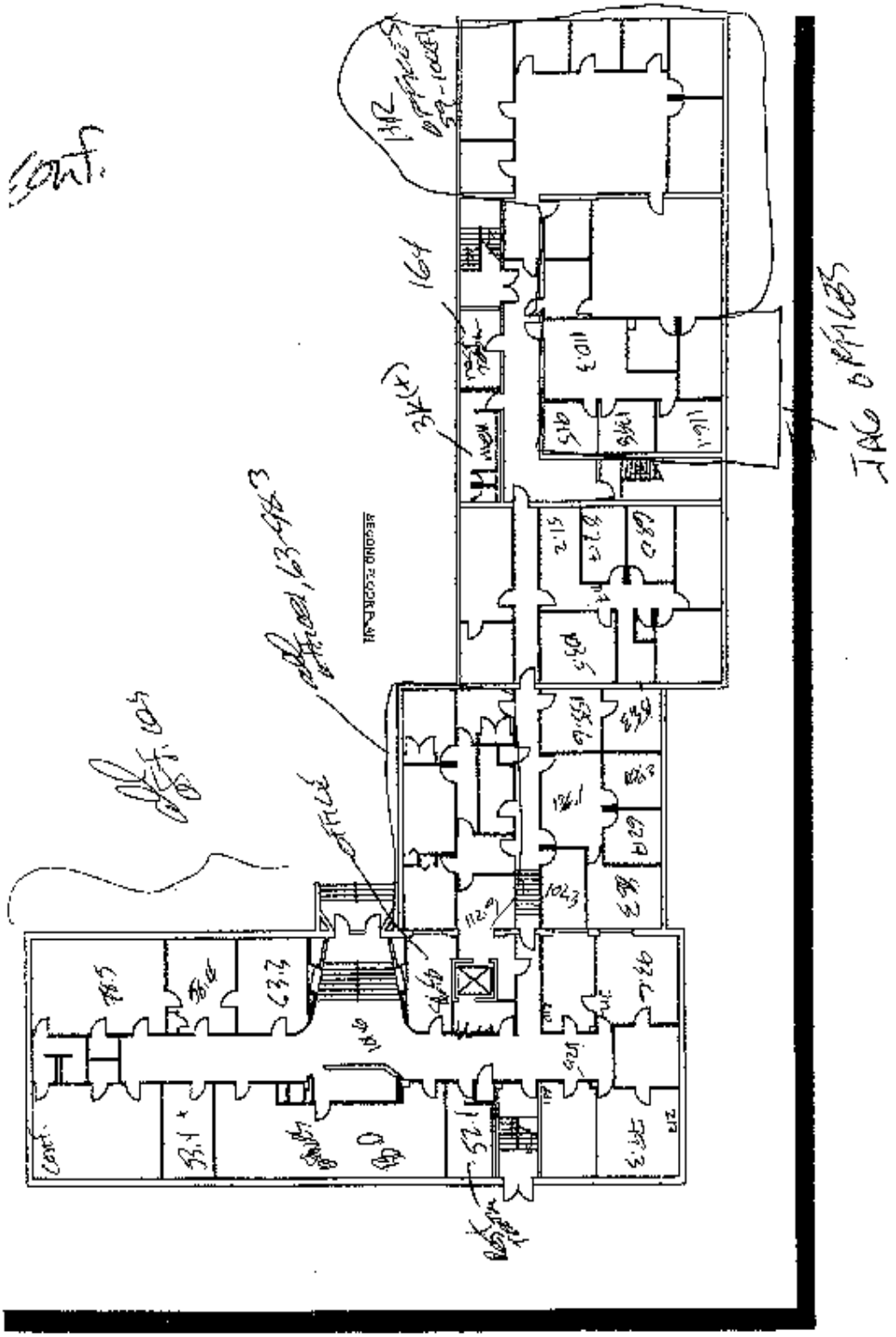
Appendix A

Charleston - Armory Readiness Center Facility Layout

AECOM



AECOM



Appendix B

Charleston - Armory Readiness Center Photographs

AECOM

Photograph 1

Building Exterior Front

Photograph 2

Boiler Room

AECOM

Photograph 3

Drill Hall

Photograph 4

Former Range Converted to Fitness Room

AECOM

Photograph 5

Former Range Converted to Locker Room

Photograph 6

HVAC Supply

AECOM

Photograph 7

Typical Corridor

Photograph 8

Typical Fiberglass Pipe Insulation

Appendix C

Analytical Results

AECOM

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:	HQ Charleston RC	Chain Of Custody:	514247		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/27/2012	Report Date:	10/30/2012

Attention: Non-[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		Total ug	Final Result		Comments
13007947	HQ-01	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007948	HQ-02	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007949	HQ-03	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007950	HQ-04	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007951	HQ-05	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007952	HQ-06	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007953	HQ-07	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007954	HQ-08	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007955	HQ-09	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007956	HQ-10	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007957	HQ-11	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13007959	HQ-13	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AECOM

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:	HQ Charleston RC	Chain Of Custody:	514247		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/27/2012	Report Date:	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Analyst: Non-Responsive

Technical Ma Non-Responsive

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514247

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

Submittal Information:
(1.) Job Name: HQ Charleston RC
(2.) Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @phone # Non-Responsive
5. Submitted by: AECOM (Signature:

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheet with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive .com.com
Comments:	☐ 2 Day (Date Due) 10/30/12	☐ Fax: .army.mil
		☐ Verbals: .army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that bluck samples be submitted with all air and surface samples

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

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

Metals Analysis
☐ Pb Paint Chip (QTY)
☒ *Pb Dust Wipe (wipe type ghost) 13 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

If field data sheets are submitted, there is no need to complete bottom section.

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX WATER OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: 1230 Contact: SF By: BDH
																no wipe in yet for the 12 ok to void
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10 / 30 / 12 @ 1100 Via: Today By (P
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/18/12
Job Number: 60735401
Contact Person: Non-Responsive

Job Name: HQ Charleston, RC
Job Location: West Virginia
Address: 1707 Coonskin Dr. Charleston, WV

Company: Aecom
Phone Number: 315-422-0826
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
HQ-01	Drill Hall - North	Floor	16 ft²	Ghost wipe
HQ-02	↓ - South	Floor		
HQ-03	↓	Top of Fire Ext. cab		
HQ-04	Kitchen	Refrigerator Top		
HQ-05	Corridor outside Locker Rm	Supply Grille		
HQ-06	12-Caretaker	Desk		
HQ-07	Copy Area Adj. to 160	Cabinet		
HQ-08	Corridor outside JAG	Floor		
HQ-09	Lobby outside Office 207	Supply Grille		
HQ-10	Locker Rm (Former Range)	Top of Locker		
HQ-11	Gym ↓ ↓	on Equipment		
HQ-12	↓ ↓ ↓	Floor	no wipe in tube	
HQ-13	Outside Locker Rm (Former Range)	Floor	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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

2. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998. http://www.dtic.mil/whs/directives/corres/pdf/605501p.pdf

3. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, 15 February 1990. http://armypubs.army.mil/epubs/pdf/R11_34.PDF

4. AR 40-5, Medical Service, Preventive Medicine, 25 May 2007. http://armypubs.army.mil/epubs/pdf/R40_5.PDF

5. AR 385-10, The Army Safety Program, 23 August 2007; Rapid Action Revision (RAR) issue date: 4 October 2011. http://armypubs.army.mil/epubs/pdf/R385_10.PDF

6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://armypubs.army.mil/epubs/pdf/P40_501.pdf

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

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

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

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

14. ANSI/ASHRAE 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

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

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

17. OSHA Instruction Letter 02-02-058, Lead Exposure in Construction, Office of Health Compliance Assistance, 13 December 1993.

18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

19. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006. http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf

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Shaw™ Shaw Environmental, Inc.

National Guard Armory
Clarksburg Readiness Center – Clarksburg, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

01 June 2004

National Guard Armory
Clarksburg Readiness Center – Clarksburg, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

01 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Clarksburg Readiness Center in Clarksburg, West Virginia [redacted] performed the evaluation on 29 October 2003. The point of contact at the readiness center was caretaker [redacted] and SSG [redacted]. The military unit was partially deployed on the date of the survey.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Safety and Industrial Hygiene Programs

- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that this surface and the area immediately around this surface be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly area/drill floor, converted firing range, hallway between the converted firing range and the drill hall, and the storage room. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Interviews with employees revealed that two former military employees were treated for an ergonomic related condition (carpal tunnel syndrome) due to computer use over several years. In addition, one person currently experiences numbness in his fingers and a sharp pain that leads to his elbow. He has also recently gotten an eye-glass prescription due to the computer use. A comprehensive ergonomic evaluation should be conducted at this armory in order to determine in the work stations can be modified in order to eliminate or minimize the ergonomic concerns.
- Measurements for temperature revealed that levels exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended

range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. The heating units should be adjusted so the temperature will fall within the acceptable range.

- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most areas; therefore, consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Clarksburg Readiness Center in Clarksburg, West Virginia. [redacted] performed the evaluation on 29 October 2003. The point of contact at the readiness center was caretaker [redacted] and SSG [redacted] The military unit was partially deployed on the date of the survey.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at one location. One sample collected from the assembly hall (temperature control box top surface) had a lead concentration of 370 $\mu g/ft^2$. It is recommended that this surface and the immediate area around the surface be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the drill hall, converted firing range, hallway between the converted firing range

and the concession, and the supply room shelf. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory in the maintenance room office on the ceiling. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that lead concentrations at this location was below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles in the war room, classroom/dayroom, computer room, clerk office/kitchen storage room, unit administrative office, operations/training room, commander's office, storage room, main hallway, common room, and NBC room (approximately square 3335 feet). The condition of the floor ties was considered good since there were no damaged tiles. In addition, suspected asbestos containing material in the form of insulation was

observed in the pipe joints and elbows throughout the facility. The condition of the pipe insulation materials was considered good (no rips, tears, or other damage).

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection -- Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection did not reveal any mold, however water damage was observed on the maintenance office ceiling and the drill hall ceiling.

The source of the water damage in the drill hall was likely from roof leaks. Please note that the leak in the maintenance office has been repaired. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees revealed that two former military employees were treated for an ergonomic related condition (carpal tunnel syndrome) due to computer use over several years. In addition, SSG Roger Moss currently experiences numbness in his fingers and a sharp pain that leads to his elbow. He has also recently gotten an eye-glass prescription due to the computer use. A comprehensive ergonomic evaluation should be conducted at this armory in order to determine in the work stations can be modified in order to eliminate or minimize the ergonomic concerns.

2.3.2 Indoor Air Quality

Measurements for temperature revealed that levels exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. The heating units should be adjusted so the temperature will fall within the acceptable range. The

results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 5. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the unit administrative

office, operations/training office, commander's office, day room/classroom, kitchen, and locker room.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2.8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The space was converted into a maintenance bay/storage room used primarily on drill weekends. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 45 micrograms lead per square foot ($\mu g/ft^2$);
- floor in the office area at 1300 $\mu g/ft^2$;
- bullet trap floor at 79 $\mu g/ft^2$;
- bullet trap wall at 8300 $\mu g/ft^2$;
- light fixture at 200 $\mu g/ft^2$; and
- stored item (storage box top surface) at 250 $\mu g/ft^2$.

The lead levels at four of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, ergonomic concerns, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Clarksburg, West Virginia
Dates of Sampling: 29 October 2003

Sample Number	Location	Results,µg/ft² [a]
WVCLA302-7	Assembly Room – stage floor (See Building Layout – Appendix B)	7.5
WVCLA302-8	Assembly Room – temperature control box top surface (See Building Layout – Appendix B)	370
WVCLA302-9	Assembly Room -- bleacher surface (See Building Layout Appendix B)	38
WVCLA302-10	Assembly Room – supply room serving counter top (See Building Layout – Appendix B)	8.3
WVCLA302-11	Assembly Room -- soda machine top surface (See Building Layout -- Appendix B)	25
WVCLA302-12	Field Blank	< 0.3 µg
WVCLA302-20	First Floor – Hallway between concession and converted firing range – heater vent top surface	81
WVCLA302-21	First Floor – Supply Room – shelf	53
WVCLA302-22	First Floor - Kitchen – counter top	3.1
WVCLA302-23	First Floor – Classroom/Day Room – television top surface	5.3
WVCLA302-24	Field Blank	0.34 µg
WVCLA302-25	First Floor – Unit Administrative Office -- shelf	5.5
WVCLA302-26	First Floor - Commander's Office -- window sill	11
WVCLA302-27	Second Floor - Common Room – table top	5.6

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Clarksburg, West Virginia
Date of Sampling: 29 October 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVCLA302-A1	Non-Responsive	1320-1506/106	2.5049	265.52	<0.004
WVCLA302-A2		1317-1525/128	2.4746	316.75	<0.003
WVCLA302-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Clarksburg, West Virginia
Date of Sampling: 29 October 2003

Sample Number	Location	Results, % By Weight
WVCLA302-PC1	Maintenance office ceiling	ND

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Clarksburg, West Virginia
Date of Sampling: 29 October 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Day Room	1	505	34.0	76.8
2nd Floor Common Room	1	656	40.5	76.3
Outdoors	-	489	37.5	55.6

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Clarksburg, West Virginia

Date of Sampling: 29 October 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Unit Administrative Office	18.7-50.1	70	No
Operations/Training Office	19.8-49.3	70	No
Commander's Office	23.2-53.6	70	No
Day Room/Classroom	22.1-46.5	70	No
Kitchen	31.3-63.2	70	No
Locker Room	2.8-16.8	40	No
Supply room (storage area)	5.6-41.3	30	Some areas
Hallway to converted Firing Range	6.3-10.2	7.5	Some areas

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Clarksburg, West Virginia

Date of Sampling: 29 October 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVCLA302-13	Floor Outside of Range	45
WVCLA302-14	Floor	1300
WVCLA302-15	Bullet Trap Floor	79
WVCLA302-16	Bullet Trap Wall	8300
WVCLA302-17	Stored Item	200
WVCLA302-18	Blank	< 0.3 µg
WVCLA302-19	Light Fixture - light shield surface	250

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Clarksburg Armory West Virginia, ARNG	Clarksburg

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
29 October 2003	Non-Responsive

IACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SSG

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 623 1731	119 Engineers	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	5	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

IAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video display terminal	3-low	D Uncontrolled Physical
7439-92-1	Inorganic Lead, dust and fumes, as Pb	2-moderate	C Uncontrolled Respiratory
1332-21-4	Asbestos (other)	2-moderate	C Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	last 4 # SSN	CATEGORY
Non-Responsive		D	F	Non-Responsive	MIL
		L	M		
		J		NOT AVAILABLE	
		P			
			↓	↓	CIV

SECTION 6. COMMENTS

___No comments See attached sheet

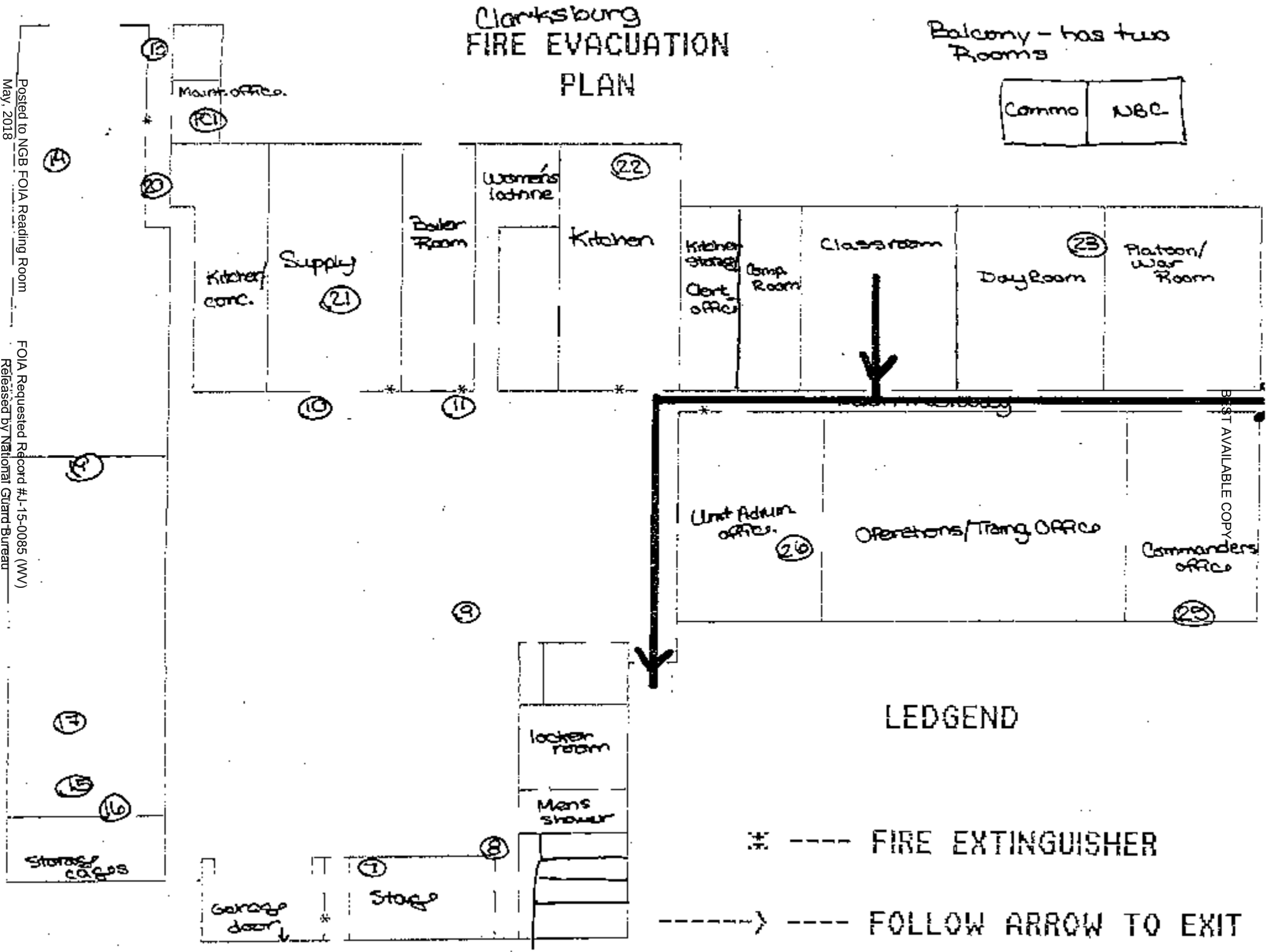
Survey conducted by Richard Semon. Building contains 5 full time Military Staff and 1 Civilian caretaker. Military staff perform mainly administrative functions

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Clarksburg	**Chain Of Custody:**	119262
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result		Comments
0408575	WVCLA302-7	Furnace	Wipe	****	0.111	5.40	ug/ft^2	7.5	ug/ft^2	
0408576	WVCLA302-8	Flame	Wipe	****	0.111	108.01	ug/ft^2	370	ug/ft^2	
0408577	WVCLA302-9	Furnace	Wipe	****	0.111	5.40	ug/ft^2	38	ug/ft^2	
0408578	WVCLA302-10	Furnace	Wipe	****	0.111	5.40	ug/ft^2	8.3	ug/ft^2	
0408579	WVCLA302-11	Furnace	Wipe	****	0.111	5.40	ug/ft^2	25	ug/ft^2	
0408580	WVCLA302-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408581	WVCLA302-13	Furnace	Wipe	****	0.111	5.40	ug/ft^2	45	ug/ft^2	
0408582	WVCLA302-14	Flame	Wipe	****	0.111	108.01	ug/ft^2	1300	ug/ft^2	
0408583	WVCLA302-15	Furnace	Wipe	****	0.111	13.50	ug/ft^2	79	ug/ft^2	
0408584	WVCLA302-16	Flame	Wipe	****	0.111	108.01	ug/ft^2	8300	ug/ft^2	
0408585	WVCLA302-17	Furnace	Wipe	****	0.111	67.51	ug/ft^2	200	ug/ft^2	
0408586	WVCLA302-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408587	WVCLA302-19	Furnace	Wipe	****	0.111	135.01	ug/ft^2	250	ug/ft^2	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Clarksburg	**Chain Of Custody:**	119262
Address:	301-01 Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

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

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

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:**	WVCLA302	**Chain Of Custody:**	121269
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Clarksburg	**Date Analyzed:**	12/29/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	29-Dec-03

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413644	WVCLA302-20	Furnace	Wipe	****	0.111	67.51	ug/ft²	81	ug/ft²	
0413645	WVCLA302-21	Furnace	Wipe	****	0.111	13.50	ug/ft²	53	ug/ft²	
0413646	WVCLA302-22	Furnace	Wipe	****	0.111	2.70	ug/ft²	3.1	ug/ft²	
0413647	WVCLA302-23	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.3	ug/ft²	
0413648	WVCLA302-24	Furnace	Wipe Blank	****	N/A	0.30	ug	0.34	ug	
0413649	WVCLA302-25	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.5	ug/ft²	
0413650	WVCLA302-26	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	ug/ft²	
0413651	WVCLA302-27	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.6	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: Non-Responsive

Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Clarksburg
Date: 10/29/2003

Sample 1

Sample Number: WVCLA302-A1

	Pump: 647615	
	Pre Flow Rate	**Post Flow Rate**
	2.527	2.474
	2.534	2.48
	2.531	2.48
	2.521	2.492
Average	**2.528**	**2.482**

Average Pre and Post	**2.5049**
Time 1	**13:20**
Time 2	**15:06**
Total Time Sampled	**1:46**
Minutes Sampled	106.00
Volume	**265.52 Liters**

Sample 2

Sample Number: WVCLA302-A2

	Pump: 648339	
	Pre Flow Rate	**Post Flow Rate**
	2.489	2.455
	2.486	2.464
	2.487	2.47
	2.478	2.468
Average	**2.485**	**2.464**

Average Pre and Post	**2.4746**
Time 1	**13:17**
Time 2	**15:25**
Total Time Sampled	**2:08**
Minutes Sampled	128.00
Volume	**316.75 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory Location: Clarksburg
Date: 05/29/08

Sample 1
Sample Number: WVCLA302-A1
Pump: 0476015

	Pre Flow Rate	Post Flow Rate
	2527	2474
	2534	2480
Average	2531	2480
	2521	2492
Average Pre and Post	2528	2482

Time 1 1320
Time 2 1506
Total Time Sampled
Minutes Sampled

Volume Liters

Sample 2
Sample Number: WVCLA302-A2
Pump: 0483389

	Pre Flow Rate	Post Flow Rate
	2489	2455
	2486	2461
Average	2487	2470
	2478	2468
Average Pre and Post	2485	2464

Time 1 1317 15
Time 2 ~~1506~~ 1825
Total Time Sampled
Minutes Sampled

Volume Liters

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVKIN312-PC1 hrough WVHUN309-PC1
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33113 through 03-33136
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/2003
Analysis Date:	11/13/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive

Analyst

Non-Responsive

Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVKIN312-PC1	03-33113	170.	0.017
WVCLA302-PC1	03-33114	ND	ND
VWBUC301-PC1	03-33115	33.	0.0033
VWBUC301-PC2	03-33116	76.	0.0076
VWBUC301-PC3	03-33117	ND	ND
WVGAS310-PC1	03-33119	64.	0.0064
WVELK301-PC1	03-33120	68.	0.0068
WVELK301-PC2	03-33121	1700.	0.17
WVKEY300-PC1	03-33124	1400.	0.14
VWKEY300-PC2	03-33125	1800.	0.18
WVWES708-PC1	03-33129	110.	0.011
WVWES708-PC2	03-33130	71000.	7.1
WVFAI303-PC1	03-33131	54.	0.0054
WVSAI303-PC1	03-33133	900.	0.090
WVSAI303-PC2	03-33134	250.	0.025
WVSAI303-PC3	03-33135	1200.	0.12
WVHUN309-PC1	03-33136	ND	ND
	Prep Blank	ND	
% Recovery	LCS	82.	
% Recovery	32912MS	87.	
% Recovery	32912MSD	89.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive

Analyst

Non-Responsive

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Clarksburg Readiness Center
5 Armory Road
Clarksburg, West Virginia 26301

AECOM
December 2012
Document No.: 60275401.1/Clarksburg Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Clarksburg Readiness Center
5 Armory Road
Clarksburg, West Virginia 26301

Non-Responsive
Industrial Hygienist
Non-Responsive
Project Manager
Non-Responsive
er

AECOM
December 2012
Document No.: 60275401.1/Clarksburg Readiness Center

Contents

List of Appendices

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Executive Summary

On October 17, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Clarksburg Readiness Center facility located at 5 Armory Road in Clarksburg, West Virginia. [redacted], SFC was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Clarksburg Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Clarksburg Readiness Center is currently staffed by three personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and an Assembly/Drill Hall.

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

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

The Clarksburg Readiness Center is housed in a one-story masonry building, and consists of approximately 40% administrative space and 60% Assembly Hall.

Lighting levels measured throughout the facility were generally adequate as per American National Standards Institute (ANSI) / Illuminating Engineering Society of North America (IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust throughout the facility did not indicate lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Clarksburg Readiness Center at the time of the survey.

No visible damaged suspect friable asbestos-containing material (ACM) was observed. Non-friable adhesive glue dabs (associated with acoustic wall tiles) were observed on the walls of the former firing range (now used for maintenance/equipment service). Several glue dabs appeared damaged and a bulk sample was collected.

A limited area of visible water damage was observed in the Assembly/Drill Hall at the Clarksburg Readiness Center. The roof reportedly was damaged by a recent (July 2012) rain storm. Mold growth was not observed on the walls or ceiling in the water damaged area of the building.

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

1.0 Facility Description and Operations

The Clarksburg Readiness Center, constructed in 1960, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The larger one-story section consists primarily of offices and administrative areas, and is finished with sheetrock walls, lay-in ceiling tiles and floor tile. The two-story Assembly/Drill Hall area is finished with painted block walls and a concrete floor. According to site personnel there is a former firing range at the facility.

The primary activity at the Clarksburg Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly/Drill Hall is rented out for civic activities such as group meetings, trade shows expos, and to other related local groups and organizations. The Clarksburg Readiness Center is currently staffed by three personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 001	Assembly Hall - table	<110 ug/ft^2
Pb – 002	Kitchen - counter	<110 ug/ft^2
Pb – 003	CO Office - desk top	<110 ug/ft^2
Pb – 004	Recruiter Office - shelf	<110 ug/ft^2
Pb – 005	Foyer - floor	<110 ug/ft^2
Pb – 006	Former Fire Range - bullet trap area	<110 ug/ft^2
Pb – 007	Former Fire Range - shelf	<110 ug/ft^2
Pb – 008	Former Fire range - floor	<110 ug/ft^2
Pb - 009	Assembly Hall - floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Wipe samples collected in association with the administrative and former firing range areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. The former firing range is currently used for maintenance equipment servicing and storage (see photographs 17 & 18 in Appendix B). All of the structures associated with the former firing range have been removed. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls and ceilings are coated with paint and appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Clarksburg Readiness Center during this survey. Thermal system piping is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition.

AECOM collected a sample of damaged non-friable glue dab associated with wall tile material in the former fire range. The sample was determined to have no asbestos detected.

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

3.1.3 Water Damage/Mold

AECOM did observe evidence of water intrusion in several 24" x 24" lay-in ceiling tiles located in one section of the Assembly/Drill Hall ceiling at the time of the survey. Roof repairs were not completed at the time of the survey. Visible mold growth was not observed on the ceiling tiles. Water intrusion is a mold growth risk factor.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Clarksburg Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Clarksburg Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Administrative Corridor	0.2	283	72.7	38.5
Physical Fitness Room	0.2	368	74.3	40.1
Recruiter Office	0.2	304	75.1	41.3

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Admin. Office Area	0.2	311	75.2	35.6
General Office	0.3	313	74.3	37.5
CO Office	0.3	284	75.1	41.7
Classroom	0.3	291	76.2	35.7
Foyer	0.4	301	75.4	36.2
Kitchen	0.6	328	74.6	36.1
Men's Room/Lockers	0.6	326	73.3	37.4
Assembly Hall	0.6	324	71.5	38.5
State Maintenance Supply	0.9	535	71.3	43.6
Office	0.2	311	69.6	39.3
Equipment Maintenance/Storage (Former Firing Range)	0.2	270	70.5	38.6

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Clarksburg Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Clarksburg Readiness Center is heated by a boiler that feeds a radiant heating system. Supply and return air is not provided by mechanical means as there is no active ventilation system.

4.1.2 HVAC Maintenance

There was no active HVAC system observed. However, building personnel indicated that the boiler is inspected annually and any associated filters changed twice a year.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were generally adequate.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Administrative Corridor	35.6	Y	5
Physical Fitness Room	24.7	N	30
Recruiter Office	36.8	N	50
Admin. Office Area	126.1	Y	50
General Office	103.6	Y	50
CO Office	135.2	Y	50
Classroom	132.4	Y	30
Foyer	89.3	Y	5
Kitchen	52.7	Y	50
Men's Room	25.7	Y	5
Assembly Hall	60.2	Y	10
State Maintenance Supply	33.7	Y	30
Office	66.2	Y	50
Fire Range	69.4	Y	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Clarksburg Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Clarksburg Readiness Center.

AECOM did not observe any damaged, friable suspect asbestos-containing materials at the Clarksburg Readiness Center. AECOM collected a sample of damaged non-friable glue dab associated with wall tile material in the former fire range. The sample was determined to have no asbestos detected.

AECOM did not observe peeling lead-based paint at the Clarksburg Readiness Center.

AECOM did observe evidence of water intrusion at the Clarksburg Readiness Center. The water intrusion was limited to a section of lay-in ceiling tiles located along one side of the Assembly/Drill Hall. Water intrusion is a mold growth risk factor.

Lighting levels measured throughout the facility were generally adequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005 with the exception of the Physical Fitness Room and Recruiters Office.

Wipe samples collected in association with the administrative and fire range areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

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

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

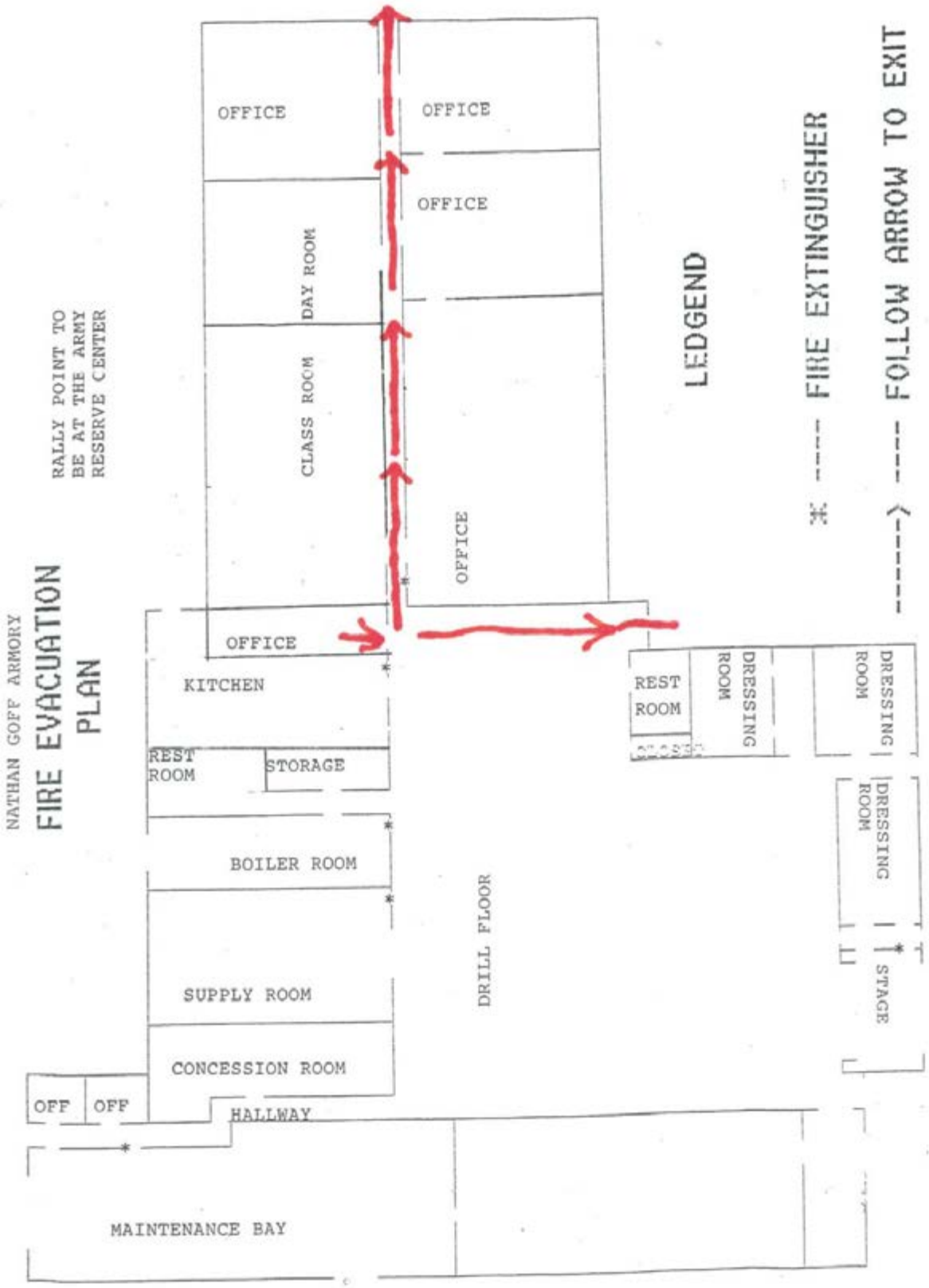
The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may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

recommendations expressed in this report are based only on conditions that were observed during AECOM's inspection of the site.

Appendix A

Clarksburg Readiness Center Facility Layout

AECOM



Appendix B

Clarksburg Readiness Center Photographs

AECOM

Photograph 1

View of Exterior Building

Photograph 2

View of Administrative Corridor

AECOM

Photograph 3

View of CO Office

Photograph 4

View of Typical Office

AECOM

Photograph 5

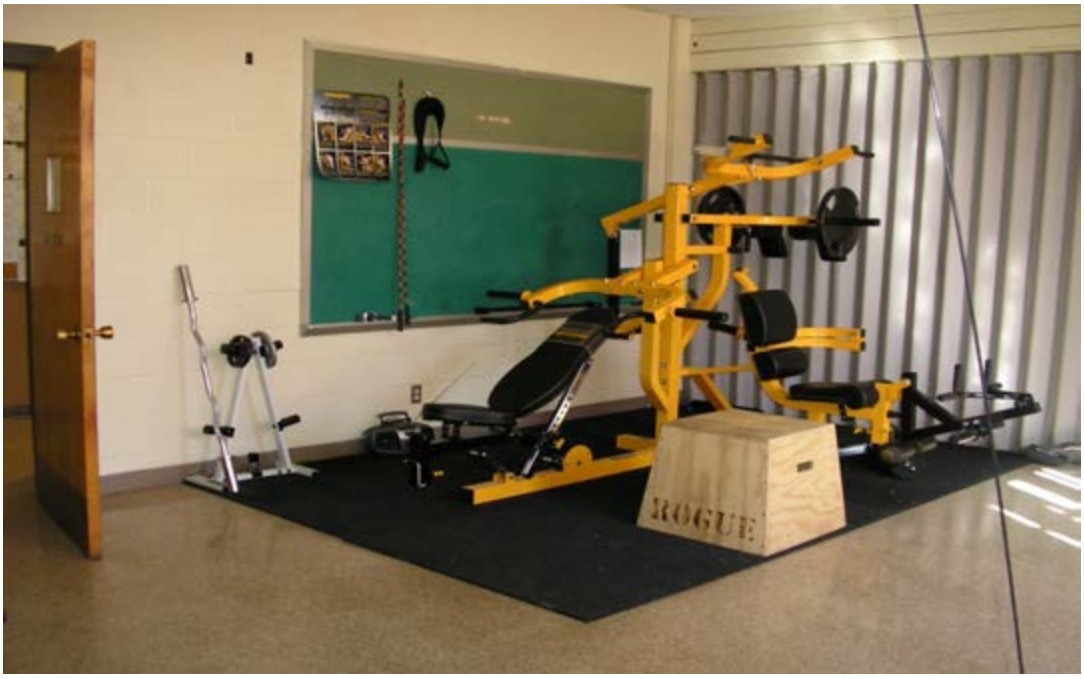
View of Orderly Office Area

Photograph 6

View of Classroom

AECOM

Photograph 7



View of Physical Fitness Room

Photograph 8

View of Office Area

AECOM

Photograph 9

View of Kitchen

Photograph 10

View of Locker Room

AECOM

Photograph 11

View of Assembly Hall

Photograph 12

View of Radiant Heat System Assembly Hall

AECOM

Photograph 13

View of Storage Area

Photograph 14

Water Damaged Ceiling Tile in Assembly Hall

AECOM

Photograph 15

View of Assembly Hall Mezzanine

Photograph 16

View of Maintenance Equipment

AECOM

Photograph 17

View of Former Gun Range

Photograph 18

View of Secondary Containment Storage Area

AECOM

Photograph 19

View of Parts Cleaning Area

Photograph 20

View of Safety Equipment Station

AECOM

Photograph 21

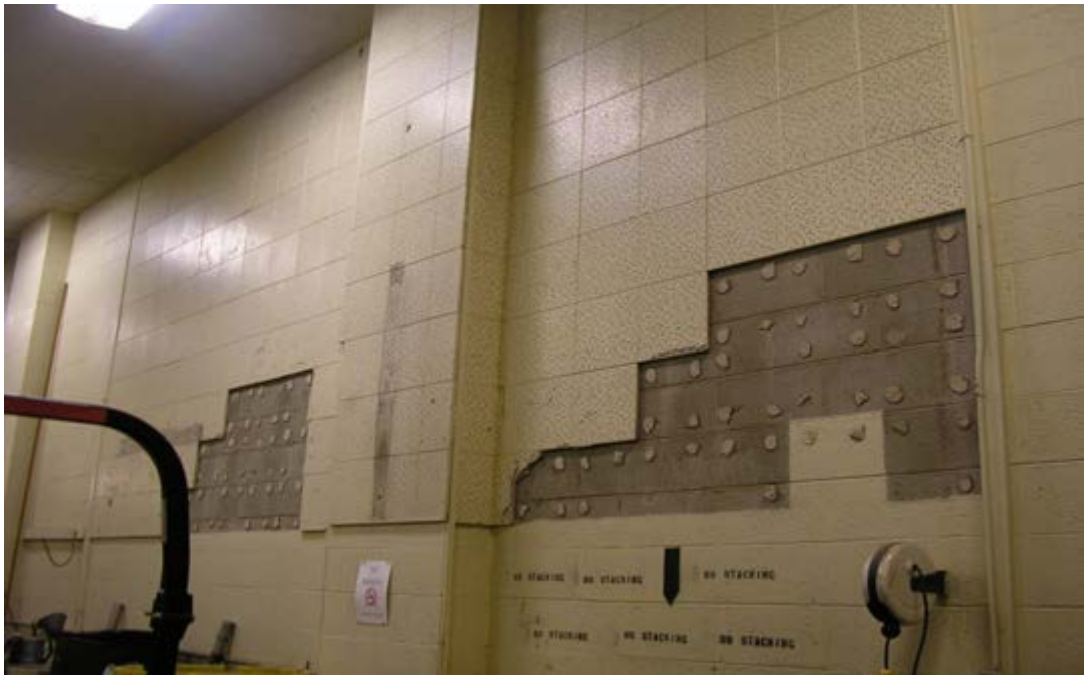
View of State Maintenance Office Area

Photograph 22

View of Glue Pucks to Missing 1'x1' Wall Tile

AECOM

Photograph 23



View of Glue Pucks to Missing 1'x1' Wall Tile

Photograph 24

View of Water Infiltration Through Ceiling Deck

AECOM

Photograph 25

Suspect Pipe Insulation in Mechanical Area/Boiler Room

Photograph 26

View of Mechanical Area/Boiler Room

Appendix C

Analytical Results

AECOM

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP® 101143-0

Client:	National Guard Bureau	Job Name:	Clarksburg/Nathan Goff RC	Chain Of Custody:	514274
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Analyzed:	10/30/2012
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM
		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
13008475	AC-010	NAD	--	--	--	--	TR	--	TR	--	--	100	Glue	Brown	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

NVLAP (101143-0) Accredited Laboratory

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Clarksburg/Nathan Goff RC	Chain Of Custody:	514274		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13008466	Pb-001	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008467	Pb-002	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008468	Pb-003	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008469	Pb-004	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008470	Pb-005	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008471	Pb-006	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008472	Pb-007	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008473	Pb-008	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008474	Pb-009	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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AECOM

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

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

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

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

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AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/17/12
Job Number: 60258401
Contact Person: Non-Responsive

Job Name: CLARKSBURG/NATHAN GOFF RC
Job Location: WEST VIRGINIA
Address: 5 Armory Rd
Clarksburg, WV

Company: AECOM
Phone Number: 3154320826
Collected: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Table	16 in^2	Gitest Wipe
Pb-002	Kitchen	Dusty Surface		
Pb-003	C/O Office	Desk		
Pb-004	Recruiter Office	Cabinet		
Pb-005	Foyer	Floor		
Pb-006	Former Range	Bullet Trap		
Pb-007	↓	Shelf		
Pb-008	↓	Floor		
Pb-009	Outside Range in Drill Hall	Floor	↓	↓
AC-010	Former Range	Wall - glue Puck		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

AECOM

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514274

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

Submittal Information:
1. Job Name: Clarksburg / NATHAN COFF RC
2. Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: [redacted]
5. Submitted by: AECOM (Signature) [redacted]

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-D[redacted]n file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: [redacted] aecom.com
Comments:	☐ 2 Day Date Due: 10/30/12	☐ Fax: [redacted] us.army.mil
		☐ Verbals: [redacted] us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 1 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that blank samples be submitted with all air and surface samples

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

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

If field data sheets are submitted, there is no need to complete bottom sections.

Metals Analysis
☐ Pb Paint Chip (QTY)
☐ *Pb Dust Wipe (wipe type:) 9 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WIPE/ OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

[redacted]

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/23/12 @ 1100 Via: Fedex By:
2. Date/Time Analyz[redacted]
3. Results Reported T[redacted] Date: 10/30/12 Time: Initials: SW
4. Comments:

Appendix D

References

References

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

2. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998. http://www.dtic.mil/whs/directives/corres/pdf/605501p.pdf

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4. AR 40-5, Medical Service, Preventive Medicine, 25 May 2007. http://armypubs.army.mil/epubs/pdf/R40_5.PDF

5. AR 385-10, The Army Safety Program, 23 August 2007; Rapid Action Revision (RAR) issue date: 4 October 2011. http://armypubs.army.mil/epubs/pdf/R385_10.PDF

6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://armypubs.army.mil/epubs/pdf/P40_501.pdf

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

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9. UFC 3-410-01FA, Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4, January 2010. http://www.wbdg.org/ccb/DOD/UFC/ufc_3_410_01fa.pdf

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

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

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

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

14. ANSI/ASHRAE 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

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

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

17. OSHA Instruction Letter 02-02-058, Lead Exposure in Construction, Office of Health Compliance Assistance, 13 December 1993.

18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

19. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006. http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf

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Shaw™ Shaw Environmental, Inc.

National Guard Armory
Dunbar Readiness Center – Dunbar, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

01 June 2004

National Guard Armory
Dunbar Readiness Center – Dunbar, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

01 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Dunbar Readiness Center in Dunbar, West Virginia. Non-Responsive performed the evaluation on 19 November 2003. The point of contact at the readiness center was SFC Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Presence of Mold
- Housekeeping
- Ergonomic Concerns

- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that this surface and the area immediately around this surface be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Measurements for humidity revealed that levels exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 60% in the armory. Since there is no HVAC system at the armory, it is recommended that a dehumidification system be installed at the armory. In addition, interviews with employees concerning indoor air quality revealed that employees have a concern about radon in the supply room vault. A comprehensive evaluation should be conducted to determine the radon levels in the vault, and, if radon levels are high, implement corrective actions to eliminate or control the radon exposures.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore consideration should be given to providing more lighting to these areas This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Dunbar Readiness Center in Dunbar, West Virginia Non-Responsive performed the evaluation on 19 November 2003. The point of contact at the readiness center was SFC Non-Responsive.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at one location. One sample collected from the assembly hall (electrical control box top surface) had a lead concentration of 1200 $\mu g/ft^2$. It is recommended that this surface and the immediate area around this surface be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (recruiter's office and CO's office). The samples were collected and analyzed in accordance with

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were not observed.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. No mold was observed, however, the inspection revealed water damage on the ceiling and wall in the lobby and kitchen. Water damage was also observed on the ceilings in classroom #2, hallway, and CO's office.

The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Measurements for humidity revealed that levels exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 60% in the armory. Since there is no HVAC system at the armory, it is recommended that a dehumidification system be installed at the armory. In addition, interviews with employees revealed indoor air quality concerns pertaining to the supply room vault and radon. It is posted that the supply room vault has a radon concern, the room does not contain an active radon detector, and the procedure prior to entering the vault is to "air out" the vault for ten minutes. The personnel have experienced headaches upon leaving the supply room vault. A comprehensive evaluation should be conducted to determine the radon levels in the vault, and, if radon levels are high, implement corrective actions to eliminate or control the radon exposures.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the readiness NCO's office, classroom #3, female latrine and orderly room/training admin office.

Consideration should be given to providing more lighting to these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The room was converted into a storage room/maintenance office. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- stored item (table top) at 220 micrograms lead per square foot ($\mu g/ft^2$);
- floor outside the range at 26 $\mu g/ft^2$;
- floor at 51 $\mu g/ft^2$;
- bullet trap at 1600 $\mu g/ft^2$; and
- light fixture (light shield surface) at 2400 $\mu g/ft^2$.

The lead levels at three of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be

decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NGB PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, suspected asbestos-containing material, visible mold, housekeeping, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, water damage, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Dunbar, West Virginia
Date of Sampling: 19 November 2003

Sample Number	Location	Results, µg/ft² [a]
WVDUN323-1	Assembly room - stereo top surface (See Building Layout Appendix B)	18
WVDUN323-2	Assembly room – electrical control box top surface (See Building Layout – Appendix B)	1200
WVDUN323-3	Assembly room -- table top (See Building Layout -- Appendix B)	10
WVDUN323-4	Assembly room - filing cabinet top surface (See Building Layoutt – Appendix B)	11
WVDUN323-5	Assembly room - table top (See Building Layout Appendix B)	4.8
WVDUN323-6	Field Blank	< 0.3 µg
WVDUN323-13	Kitchen – stove shelf top surface	4.8
WVDUN323-14	Supply Room -- desktop	9.6
WVDUN323-15	Classroom -- window sill	7
WVDUN323-16	C.O. Office - window sill	23
WVDUN323-17	NCO Readiness Office – cabinet top surface	4.3
WVDUN323-18	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Dunbar, West Virginia
Date of Sampling: 19 November 2003

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVDUN323-A1	Recruiter's Office	1209-1500/171	2.4486	418.71	<0.002
WVDUN323-A2	CO's Office	1209-1500/171	2.4934	426.37	<0.002
WVDUN323-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Dunbar, West Virginia
Date of Sampling: 19 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Drill Hall	1	583	62.0	69.8
Outdoors	-	485	81.0	67.3

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Dunbar, West Virginia

Date of Sampling: 19 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Readiness NCO's Office	4.3-20.1	70	No
Classroom #3	18.1-41.3	70	No
Hallway	2.98-12.4	7.5	Some Areas
Female Latrine	12.3-25.1	40	No
Orderly Room/Training Admin Office	18.1-39.6	70	No

[a] fc - Footcandles
[b] Additional lighting provided above desk/working area

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Dunbar, West Virginia

Date of Sampling: 19 November 2003

Sample Number	Location	Results, $\mu g/ft^{2}$ [a]
WVDUN323-7	Stored Items table top	220
WVDUN323-8	Floor outside the range	26
WVDUN323-9	Floor	51
WVDUN323-10	Bullet Trap	1600
WVDUN323-11	Light Fixture	2400
WVDUN323-12	Field Blank	0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Dunbar Armory West Virginia ARNG	Dunbar

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
19 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SFC

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304-768-8011	1ST BN 150th AR COB/DET3 HHC	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	3	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/MATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
7439-92-1	Lead, Inorganic Dusts and Fumes, as Pb	2-moderate	Uncontrolled Respiratory
		AS NEED USE.	

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive [redacted]			M	NOT AVAILABLE	NIL
			↓	↓	↓
			↓	↓	CIV

SECTION 6. COMMENTS

___No comments See attached sheet

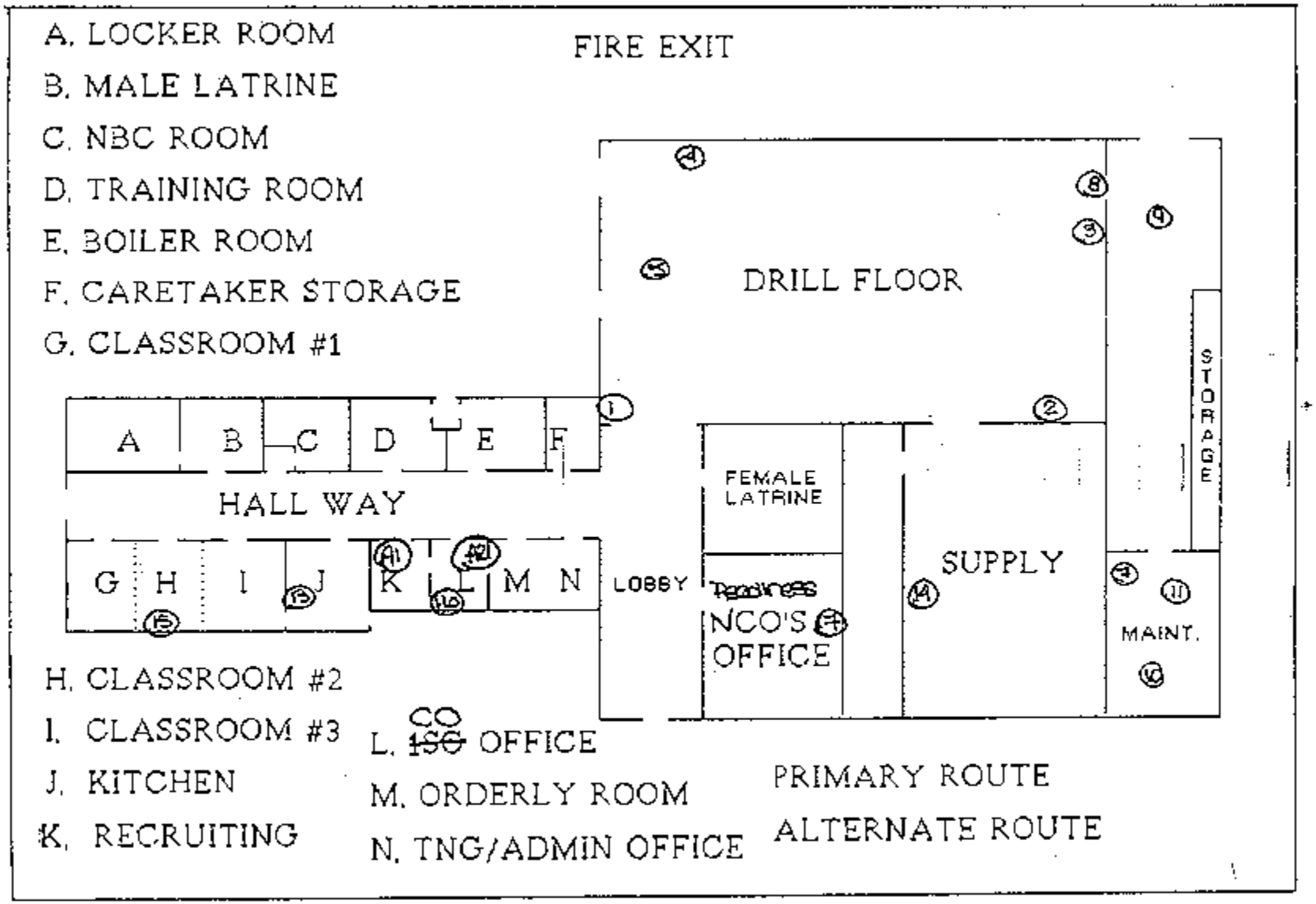
survey conducted by Michaeleje Senior. Buiding contains 3 full time military personnel and 1 civilian caretaker. Military staff perform mainly administrative functions.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Dunbar	**Chain Of Custody:**	119406
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	12/04/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	04-Dec-03
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
0411131	WVDUN323-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	18	ug/ft²	
0411132	WVDUN323-2	Flame	Wipe	****	0.111	108.01	ug/ft²	1200	ug/ft²	
0411133	WVDUN323-3	Furnace	Wipe	****	0.111	2.70	ug/ft²	10	ug/ft²	
0411134	WVDUN323-4	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	ug/ft²	
0411135	WVDUN323-5	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.8	ug/ft²	
0411136	WVDUN323-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0411137	WVDUN323-7	Furnace	Wipe	****	0.111	67.51	ug/ft²	220	ug/ft²	
0411138	WVDUN323-8	Furnace	Wipe	****	0.111	2.70	ug/ft²	26	ug/ft²	
0411139	WVDUN323-9	Furnace	Wipe	****	0.111	6.75	ug/ft²	51	ug/ft²	
0411140	WVDUN323-10	Flame	Wipe	****	0.111	108.01	ug/ft²	1600	ug/ft²	
0411141	WVDUN323-11	Flame	Wipe	****	0.111	108.01	ug/ft²	2400	ug/ft²	
0411142	WVDUN323-12	Furnace	Wipe Blank	****	N/A	0.30	ug	0.3	ug	

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

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

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.

Analy[redacted] Technical 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

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVDUN323	**Chain Of Custody:**	121142
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Dunbar	**Date Analyzed:**	12/16/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	16-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413466	WVDUN323-13	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.8	ug/ft²	
0413467	WVDUN323-14	Furnace	Wipe	****	0.111	2.70	ug/ft²	9.6	ug/ft²	
0413468	WVDUN323-15	Furnace	Wipe	****	0.111	2.70	ug/ft²	7	ug/ft²	
0413469	WVDUN323-16	Furnace	Wipe	****	0.111	2.70	ug/ft²	23	ug/ft²	
0413470	WVDUN323-17	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.3	ug/ft²	
0413471	WVDUN323-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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: Non-Responsive Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVOAK321-A1 through VACLI325-A3
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5799
DCL Sample ID No.:	03-34380 through 03-34414
Sample Receipt Date:	11/25/2003
Preparation Date:	12/02/03
Analysis Date:	12/03/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVOAK321-A1	03-34380	228.69	ND	<0.004
WVOAK321-A2	03-34381	225.34	ND	<0.004
WVOAK321-A3	03-34382	0	ND	-
WVBEC321-A1	03-34384	305.03	ND	<0.003
WVBEC321-A2	03-34385	301.29	ND	<0.003
WVBEC321-A3	03-34386	0	ND	-
WVDUN323-A1	03-34387	418.71	ND	<0.002
WVDUN323-A2	03-34388	426.37	ND	<0.002
WVDUN323-A3	03-34389	0	ND	-
WV2CH322-A1	03-34390	330.94	ND	<0.003
WV2CH322-A2	03-34391	324.29	ND	<0.003
WV2CH322-A3	03-34392	0	ND	-
WV1CH322-A1	03-34393	316.36	ND	<0.003
WV1CH322-A2	03-34394	312.78	ND	<0.003
WV1CH322-A3	03-34395	0	ND	-
WVSTA323-A1	03-34396	350.61	ND	<0.003
WVSTA323-A2	03-34397	339.14	ND	<0.003
WVSTA323-A3	03-34398	0	ND	-
WVCHA324-A1	03-34400	162.63	ND	<0.006
WVCHA324-A2	03-34401	172.47	ND	<0.006
	Prep Blank		ND	
% Recovery	LCS 1		109.	
% Recovery	LCS 2		111.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]

Analyst

Non-Responsive [redacted]

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVCHA324-A3	03-34402	0	ND	-
WVALL324-A1	03-34403	222.94	ND	<0.004
WVALL324-A2	03-34404	219.24	ND	<0.005
WVALL324-A3	03-34405	0	ND	-
WVRON325-A1	03-34406	327.48	ND	<0.003
WVRON325-A2	03-34407	322.77	ND	<0.003
WVRON325-A3	03-34408	0	ND	-
VACLI325-A1	03-34412	390.23	ND	<0.003
VACLI325-A2	03-34413	405.99	ND	<0.002
VACLI325-A3	03-34414	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 3		107.	
% Recovery	LCS 4		105.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Dunbar
Date: 11/19/2003

Sample 1

Sample Number: WVDUN323-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.461	2.441
	2.449	2.459
	2.452	2.440
	2.452	2.435
Average	**2.454**	**2.444**

Average Pre and Post **2.4486**

Time 1 12:09
Time 2 15:00
Total Time Sampled **2:51**
Minutes Sampled 171.00

Volume **418.71 Liters**

Sample 2

Sample Number: WVDUN323-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.528	2.471
	2.522	2.472
	2.508	2.469
	2.507	2.47
Average	**2.516**	**2.471**

Average Pre and Post **2.4934**

Time 1 12:09
Time 2 15:00
Total Time Sampled **2:51**
Minutes Sampled 171.00

Volume **426.37 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory Location: Dunbar
Date: 11/19/08

Sample 1

Sample Number: WVDUN323-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate	
	2461	~~2471~~	2441
	2449	2472	2459
Average	2452	~~2469~~	2440
	2452	~~2470~~	2435
Average Pre and Post	2454	2471	2444

Time 1 1209
Time 2 15:00
Total Time Sampled
Minutes Sampled

Volume Liters

Sample 2

Sample Number: WVDUN323-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2528	2471
	2522	2472
Average	2508	2469
	2507	2470
Average Pre and Post	2516	2471

Time 1 1204
Time 2 15:00
Total Time Sampled
Minutes Sampled

Volume Liters

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

Prepared for:

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




Industrial Hygiene Survey
for WVARNG – Dunbar Readiness Center
605 26th Street
Dunbar, West Virginia 25064

AECOM
December 2012
Document No.: 60275401/Dunbar Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Dunbar Readiness Center
605 26th Street
Dunbar, West Virginia 25064

Non-Responsive
Industrial Hygienist

Non-Responsive
Project Manager

Non-Responsive
Northeast District Health & Safety Manager

AECOM Environment
December 2012
Document No.: 60275401/Dunbar Readiness Center

AECOM

Contents

List of Appendices

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Executive Summary

On October 16, 2012, AECOM Technical Services Northeast, Inc. (AECOM) conducted an Industrial Hygiene (IH) survey of the Dunbar Readiness Center facility located at 605 26th Street in Dunbar, West Virginia. SSG Non-Pa[redacted] was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Dunbar Readiness Center operations.

The industrial hygiene survey was conducted in general accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Dunbar Readiness Center is currently staffed by 3 personnel. The facility is configured as administrative areas and a drill hall.

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

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

The Dunbar Readiness Center is housed in a single story masonry building, slab on grade, constructed in 1959.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected in association with the former range and drill hall indicated lead levels above the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the U.S. Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 micrograms per square foot (ug/ft^2) for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

No damaged suspect asbestos containing materials were observed during the evaluation.

No peeling paint was observed during the evaluation.

No evidence of water intrusion was observed during the evaluation.

There is no Heating, Ventilation & Air Conditioning (HVAC) system in the building that mechanically provides fresh air to occupied spaces. The heating system is a boiler that provides radiant heat.

1.0 Facility Description and Operations

The Dunbar Readiness Center is located in a single story masonry building constructed in 1959. The drill hall is at the west side of the facility with administrative spaces on the east side and supply to the north of the drill hall. There is a former firing range on the west side of the drill hall that has been converted to storage space. The Interior finishes are typically comprised of painted block walls; acoustical drop ceilings, and floor tile.

The primary activity at the Dunbar Readiness Center is routine administrative duties. The Dunbar Readiness Center is currently staffed by approximately 3 personnel.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall and administrative areas, following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost Wipes.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
DB-01	Drill Hall Floor - North	<110 ug/ft^2
DB-02	Drill Hall Floor – South (Outside Range)	<110 ug/ft^2
DB-03	Drill Hall – Top of Electrical Box	510 ug/ft^2
DB-04	Kitchen – Top Backsplash on Grill	<110 ug/ft^2
DB-05	Office – Desk	<110 ug/ft^2
DB-06	Office – Top of Bookcase	<110 ug/ft^2
DB-07	Corridor – Floor	<110 ug/ft^2
DB-08	Former Range – Bullet Trap Area	5,800 ug/ft^2
DB-09	Former Range – Light Fixture	430 ug/ft^2
DB-10	Former Range – Overhead Steel Beam	46,000 ug/ft^2
DB-11	Former Range – Stored Item	550 ug/ft^2
DB-12	Former Range – Floor	370 ug/ft^2

ug/ft^2 = Micrograms per square foot.

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

Indoor firing ranges shall be converted in accordance with NG-PAM 420-15. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. AECOM did not observe peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos-containing materials (ACM) in readily accessible areas of the Dunbar Readiness Center during this survey.

Typical miscellaneous building materials observed throughout the building but not sampled include floor tiles and associated mastic, fiberglass pipe insulation, cove base and associated mastic, and ceiling tiles.

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion during this survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section contains general office space. The administration section is generally utilized by all of the Dunbar Readiness Center staff members. No Indoor Air Quality concerns were noted by the Dunbar Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. All readings were within acceptable guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Outside - Baseline	0.6	438	70.6	38.4
Drill Hall	1.0	544	71.0	41.6
Office	1.1	564	70.9	44.0

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

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

No potential for contamination of clean air sources was observed at the facility

There is no Heating, Ventilation & Air Conditioning (HVAC) system in the building that mechanically provides fresh air to occupied spaces. The heating system is a boiler that provides radiant heat

4.1.2 HVAC Maintenance

There is no Heating, Ventilation & Air Conditioning (HVAC) system in the building that mechanically provides fresh air to occupied spaces; therefore there is no HVAC maintenance schedule.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in all areas.

Table 5-1: Light Survey

Location	Results (Foot candles)	Met Standard (Y/N)	Standard*
Men's Locker Room	900+	Y	7
Men's Shower	347	Y	5
Men's Latrine	74.2	Y	5
Women's Locker Room	70.1	Y	7
PUBS Room	58.6	Y	50
Boiler Room	41.1	Y	30
Storage	39.4	Y	30
Classroom	66.2-87.8	Y	30
Kitchen	55.3	Y	50
Recruiter	84.8	Y	50
Admin. Supply	64.8	Y	30
Training NCO	90.9	Y	50
Women's Latrine	31.6	Y	5
Supply	60.2	Y	30
Drill Hall	65-77	Y	30
Former Range (Storage)	40-65	Y	30
Corridor	44.9	Y	5
Lobby	61.2	Y	10
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI/IESNA RP-7-01)			

6.0 Evaluation of Attached Garage

There is no garage associated with the Dunbar Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Dunbar Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

No damaged suspect asbestos containing materials were observed during the evaluation.

No peeling paint was observed during the evaluation.

No evidence of water intrusion was observed during the evaluation.

There is no Heating, Ventilation & Air Conditioning (HVAC) system in the building that mechanically provides fresh air to occupied spaces. The heating system is a boiler that provides radiant heat.

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

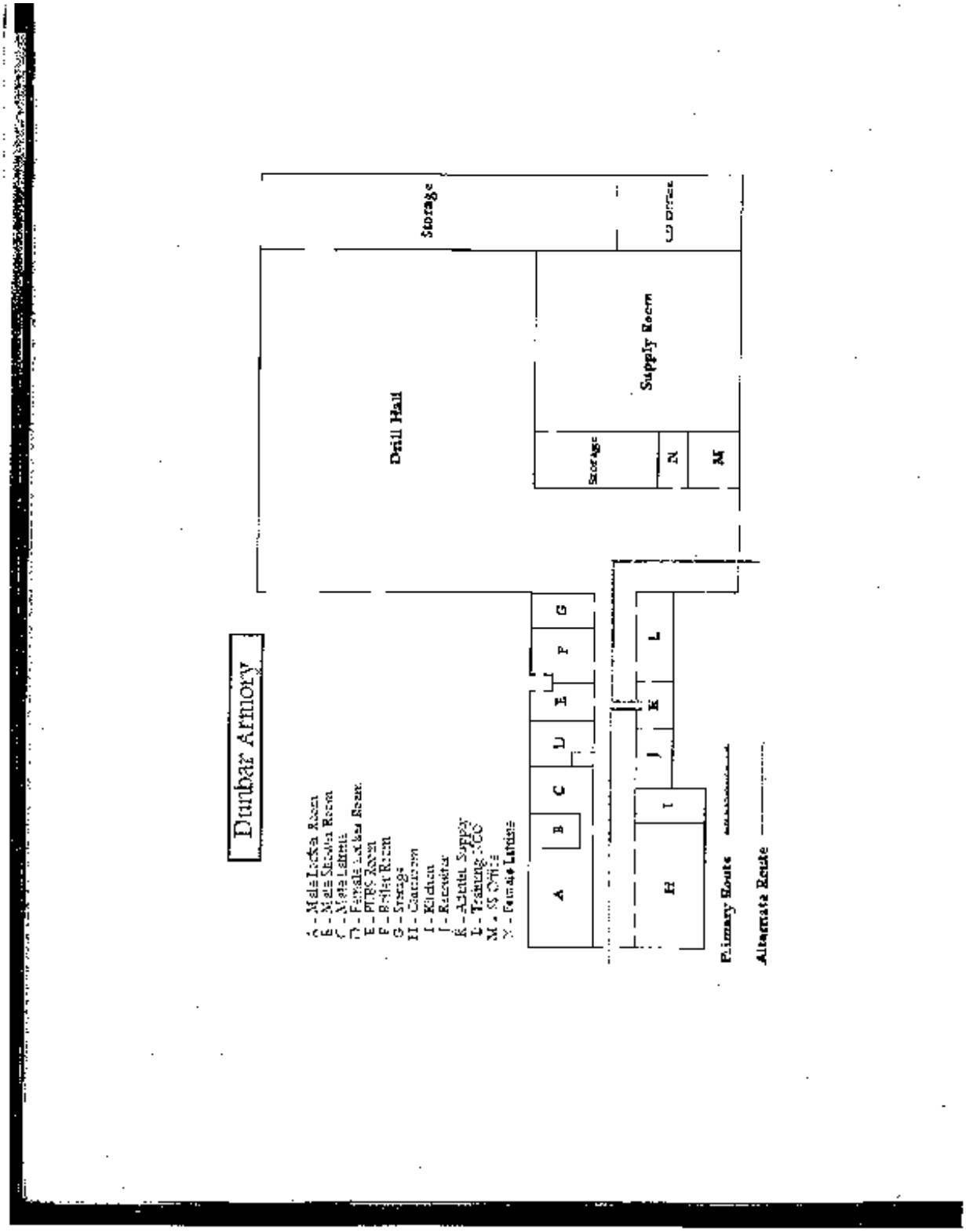
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

Appendix A

Dunbar Readiness Center Facility Layout

AECOM



Appendix B

Dunbar Readiness Center Photographs

AECOM

Photograph 1

Building Exterior Front

Photograph 2

Boiler Room

AECOM

Photograph 3

Classroom

Photograph 4

Drill Hall Heating

AECOM

Photograph 5

Drill Hall

Photograph 6

Former Range Bullet Trap

AECOM

Photograph 7

Former Range

Photograph 8

Lobby

Appendix C

Analytical Results

AECOM

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:	Dunbar RC	Chain Of Custody:	514253		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments
13007987	DB-01	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007988	DB-02	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007989	DB-03	Flame	Wipe	****	0.111	110 ug/ft²	57	510 ug/ft²	
13007990	DB-04	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007991	DB-05	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007992	DB-06	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007993	DB-07	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007994	DB-08	Flame	Wipe	****	0.111	110 ug/ft²	640	5800 ug/ft²	
13007995	DB-09	Flame	Wipe	****	0.111	110 ug/ft²	48	430 ug/ft²	
13007996	DB-10	Flame	Wipe	****	0.111	110 ug/ft²	5100	46000 ug/ft²	
13007997	DB-11	Flame	Wipe	****	0.111	110 ug/ft²	61	550 ug/ft²	
13007998	DB-12	Flame	Wipe	****	0.111	110 ug/ft²	42	370 ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

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CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Dunbar RC	Chain Of Custody:	514253		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/30/2012

Attention: Non-R i

Summary of Atomic Absorption Analysis for Lead

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

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Non-Responsive

Analys

Technical Manag

Non-Responsive

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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) 514253

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

Submittal Information:
1. Job Name: Dunbar RC
2. Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ Non-Responsive
5. Submitted by: AECOM (Signature)

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day a... file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due: ☐ 24 Hours Time Due: Comments:	☐ Immediate ☐ 3 Day ☐ Next Day ☒ 5 Day + ☐ 2 Day (Date Due: 10/30/12) ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report ☒ Email: Non-Responsive .aecom.com; ☐ Fax: Non-Responsive us.army.mil; ☐ Verbals us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

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

Metals Analysis
☐ Pb Paint Chip (QTY)
☒ *Pb Dust Wipe (wipe type: ghost) 12 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/22/12 @ 1000 Via: FedEx By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/16/12
Job Number: 60235107
Contact Person: Non-Responsive

Job Name: Dunbar RC
Job Location: West Virginia
Address: 605 26th St
Dunbar, WV

Company: AECOM
Phone Number: 315 432 05206
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
DB-01	Drill Hall North	Floor	ft^2	Ghost Wipe
DB 02	South	Floor		
DB 03	North	Elec. Box		
DB 04	Kitchen	Top of Backsplash on grill		
DB 05	OFFICE	Desk		
DB 06	OFFICE	Top of Bookcase		
DB 07	Corridor/LOBBY	Floor		
DB 08	Former Range Cold Bullet Trap AREA	Floor		
DB 09	Lig	Light Fixt.		
DB 10		Steel Beam		
DB 11		Stored Item		
DB 12		Floor		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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14. ANSI/ASHRAE 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

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18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

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Shaw™ Shaw Environmental, Inc.

National Guard Armory
Elkins Readiness Center – Elkins, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

01 June 2004

National Guard Armory
Elkins Readiness Center – Elkins, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

01 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Elkins Readiness Center in Elkins, West Virginia Non-Responsive performed the evaluation on 28 October 2003. The point of contact at the readiness center was SFC Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and boiler insulation) suspected of containing asbestos were observed. It is recommended that an operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential for a mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- Measurements for temperature revealed that levels were below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific locations. Also, interviews with employees revealed that there is a concern about ventilation in the supply room. A portable fan could be used to circulate air and improve ventilation in the supply room.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in all of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls

with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to replace the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Elkins Readiness Center in Elkins, West Virginia. Non-Responsive performed the evaluation on 28 October 2003. The point of contact at the readiness center was SFC Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary. Since the results revealed lead at acceptable levels on the drill floor, the other wipe samples were not submitted for analysis.

However, wipe sampling for lead revealed a concentration above a level of 40 $\mu g/ft^2$ in the assembly room (temperature control box top surface) and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory on the kitchen ceiling and on the outside overhang above the front doors. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that the lead concentrations at both locations were below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles and pipe insulation. The floor tiles were observed in the hallway adjacent to the men's shower and latrine, foyer of the women's latrine, lobby floors, kitchen, kitchen storage room, classroom, day room, main hallway, main offices, recruiter's office, and commander's office (approximately 4278 square feet). The condition of the floor tiles was considered good. The insulation was observed in the boiler room on a tank (approximately 100 square feet). The condition of the insulation materials was considered good (no rips, tears, or other damage

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage and mold on the wall and ceiling of the supply room vault. Water damage was observed on the ceilings of the drill hall, supply room, and the maintenance office.

The source of the water damage was likely from roof leaks. Please note that the roof is scheduled to be replaced. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential for a mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Measurements for temperature revealed that levels were below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific locations.

Interviews with employees revealed that there is a concern about ventilation in the supply room. A portable fan could be used to circulate air and improve ventilation in the supply room.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 5. As can be seen from the results, the lighting did not meet the minimum requirements in all areas, including the maintenance office, supply room (office), locker room, men's latrine, commander's office, classroom, day room, and kitchen.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The bullet trap area is the only remnant of the former firing range; the former firing range consisted of a portion of the drill hall floor and the bullet trap area. The bullet trap space was converted into a maintenance office. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- stored item (shelf top surface) at 650 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 75 $\mu g/ft^2$;
- floor outside the range 5.4 $\mu g/ft^2$; and
- light fixtures at 10000 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to replace the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, housekeeping, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, visible mold, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Elkins, West Virginia
Date of Sampling: 28 October 2003

Sample Number	Location	Results, µg/ft² [a]
WVELK301-7	Assembly room - soda (Pepsi) machine top surface (See Building Layout – Appendix B)	23
WVELK301-8	Assembly room - soda (Coke) machine top surface (See Building Layout - Appendix B)	46
WVELK301-9	Assembly room - temperature control box top surface (See Building Layout – Appendix B)	190
WVELK301-10	Assembly room - stage desktop (See Building Layout - Appendix B)	5.6
WVELK301-11	Assembly room - bleacher top surface (See Building Layout – Appendix B)	11
WVELK301-12	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Elkins, West Virginia
Date of Sampling: 28 October 2003

Sample Number	Employee/ General Sample	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVELK301-A1	Non-Responsive	0740-0940/120	2.4575	294.90	<0.003
WVELK301-A2		0738-0946/128	2.3903	305.95	<0.003
WVELK301-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Elkins, West Virginia
Date of Sampling: 28 October 2003

Sample Number	Location	Results, % By Weight
WVELK301-PC1	Kitchen ceiling	0.0068
WVELK301-PC2	Outside front doors – overhang ceiling	0.17

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Elkins, West Virginia
Date of Sampling: 28 October 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor – drill hall	1	552	51.1	64.8
Outdoors	-	537	62.8	36.7

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Elkins, West Virginia

Date of Sampling: 28 October 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Maintenance Office	6.7-53.7	70	No
Supply Room (office)	6.5-42.3	70	No
Locker Room	3.96-14.95	40	No
Men's Latrine	2.9-31.3	40	No
Commander's Office	30.1-49.3	70	No
Classroom	23.6-48.5	70	No
Day Room	23.6-48.3	70	No
Kitchen	3.45-11.5	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Elkins, West Virginia

Date of Sampling: 28 October 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVELK301-13	Floor	75
WVELK301-14	Floor outside of bullet trap room	5.4
WVELK301-15	Stored Item - shelf top	650
WVELK301-16	Lighting fixture	10000
WVELK301-12	Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Elkins Armory West Virginia- ARNG	Elkins

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
28 October 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SFC

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 - 636 - 1779	Battery A, 1st Battalion 201st Field Artillery	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1	3	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTKXXX	Video Display Terminal	3 - low	D Uncontrolled Physical
7439-92-1	Lead, Inorganic dust and fume, as Pb	2 - moderate	C Uncontrolled Respiratory
1332-21-4	Asbestos (other	2-moderate	C Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive		B	M	NOT AVAILABLE	MIL
		H			
		S			
					CIV

SECTION 6. COMMENTS

___No comments ___See attached sheet

Nichole Seman conducted the survey. Building contains 3 (three) full time military employees and 1 (one) civilian caretaker. Employees perform mainly administrative functions.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

DEPARTMENT OF THE ARMY
BATTERY A
1ST BATTALION 201ST FIELD ARTILLERY
142 ROBERT E. LEE EXTENSION, ELKINS, WV 26241-3283

28 October 2003

MEMORANDUM FOR RECORD

SUBJECT: FULL TIME PERSONNEL ON DUTY

1. The following list of personnel work at this installation full time daily from 0730/1600hrs during Monday through Friday. They are as follows:

Non-Responsive

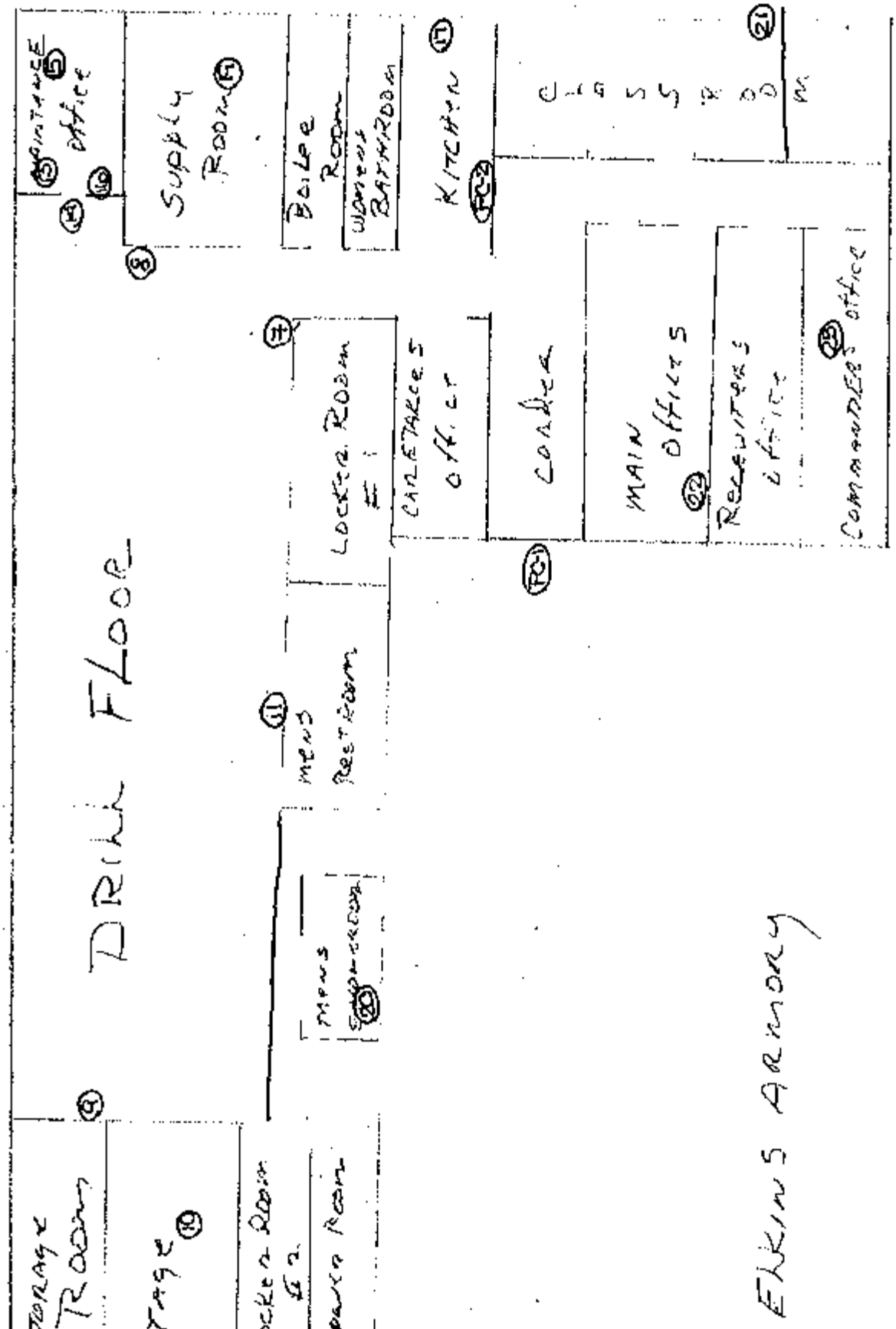
READINESS NCO
SUPPLY SERGEANT
TRAINING NCO

2. If any additional information is needed. POC SFC Non-Respo at (304) 636-1779.

Non-Responsive

SFC, AGR, WVARNG
Readiness NCO

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Elkins	**Chain Of Custody:**	119253
Address:	301-III Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/18/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	18-Nov-03

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0408491	WVELK301-7	Furnace	Wipe	****	0.111	2.70	ug/ft²	23	ug/ft²	
0408492	WVELK301-8	Furnace	Wipe	****	0.111	13.50	ug/ft²	46	ug/ft²	
0408493	WVELK301-9	Furnace	Wipe	****	0.111	67.51	ug/ft²	190	ug/ft²	
0408494	WVELK301-10	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.6	ug/ft²	
0408495	WVELK301-11	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	ug/ft²	
0408496	WVELK301-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408497	WVELK301-13	Furnace	Wipe	****	0.111	27.00	ug/ft²	75	ug/ft²	
0408498	WVELK301-14	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.4	ug/ft²	
0408499	WVELK301-15	Furnace	Wipe	****	0.111	135.01	ug/ft²	650	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: Non-Responsive **Technical Manager:** Non-Responsive

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:**	WVELK301	**Chain Of Custody:**	122730
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Elkins, WV	**Date Analyzed:**	2/11/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	11-Feb-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
0423929	WVELK301-16	Flame	Wipe	****	0.111	108.01	ug/ft^2	10000	ug/ft^2	

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]

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Elkins
Date: 10/28/2003

Sample 1

Sample Number: WVELK301-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.485	2.438
	2.49	2.445
	2.47	2.452
	2.433	2.447
Average	**2.470**	**2.446**

Average Pre and Post **2.4575**

Time 1	7:40
Time 2	9:40
Total Time Sampled	**2:00**
Minutes Sampled	120.00

Volume **294.90 Liters**

Sample 2

Sample Number: WVELK301-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.411	2.375
	2.399	2.38
	2.397	2.38
	2.401	2.379
Average	**2.402**	**2.379**

Average Pre and Post **2.3903**

Time 1	7:38
Time 2	9:46
Total Time Sampled	**2:08**
Minutes Sampled	128.00

Volume **305.95 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Elkins
Date: 10/28/03

Sample 1
Sample Number: WVELK301-A/1
Pump: 048389

	Pre Flow Rate	Post Flow Rate
	2375	2411
	2380	2399
	2380	2397
Average	2379	2401
Average Pre and Post	2379	2402

Time 1 0738
Time 2 0946
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2
Sample Number: WVELK301-A/1
Pump: 047615

	Pre Flow Rate	Post Flow Rate
	2485	2438
	2490	2445
	2470	2462
Average	2483	2447
Average Pre and Post	2480	2446

Time 1 0740
Time 2 0940
Total Time Sampled 2 hours
Minutes Sampled 120

Volume **Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVKIN312-PC1 hrough WVHUN309-PC1
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33113 through 03-33136
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/2003
Analysis Date:	11/13/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVKIN312-PC1	03-33113	170.	0.017
WVCLA302-PC1	03-33114	ND	ND
VWBUC301-PC1	03-33115	33.	0.0033
VWBUC301-PC2	03-33116	76.	0.0076
VWBUC301-PC3	03-33117	ND	ND
WVGAS310-PC1	03-33119	64.	0.0064
WVELK301-PC1	03-33120	68.	0.0068
WVELK301-PC2	03-33121	1700.	0.17
WVKEY300-PC1	03-33124	1400.	0.14
VWKEY300-PC2	03-33125	1800.	0.18
WVWES708-PC1	03-33129	110.	0.011
WVWES708-PC2	03-33130	71000.	7.1
WVFAI303-PC1	03-33131	54.	0.0054
WVSAI303-PC1	03-33133	900.	0.090
WVSAI303-PC2	03-33134	250.	0.025
WVSAI303-PC3	03-33135	1200.	0.12
WVHUN309-PC1	03-33136	ND	ND
	Prep Blank	ND	
% Recovery	LCS	82.	
% Recovery	32912MS	87.	
% Recovery	32912MSD	89.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Elkins Readiness Center
201 Caisson Drive
Elkins, West Virginia 26241

AECOM
December 2012
Document No.: 60275401.1/Elkins Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Elkins Readiness Center
201 Caisson Drive
Elkins, West Virginia 26241

Non-Responsive
Industrial Hygienist
Non-Responsive
Project Manager
Non-Responsive
er

AECOM
December 2012
Document No.: 60275401.1/Elkins Readiness Center

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Executive Summary

On October 16, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Elkins Readiness Center facility located at 201 Caisson Drive in Elkins, West Virginia. Non-R, SFC was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Elkins Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Elkins Readiness Center is currently staffed by eleven personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and a Drill/Assembly Hall.

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

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

The Elkins Readiness Center is housed in a one-story masonry building, and consists of approximately 60% administrative space and 40% Assembly Hall.

Lighting levels measured throughout the facility were adequate as per American National Standards Institute (ANSI) / Illuminating Engineering Society of North America (IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust throughout the facility did not indicate lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Elkins Readiness Center during this survey.

No visible damaged suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of air handling units that provide fresh air from outside the building exterior to administrative areas.

1.0 Facility Description and Operations

The Elkins Readiness Center, constructed in 2011, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The lager one-story section consists primarily of offices and administrative areas, and is finished with sheetrock walls, lay-in ceiling tiles and floor tile. The two-story Assembly/Drill Hall area is finished with painted block walls and a concrete floor. According to site personnel there is a state-of-the-art simulated firing range system at the facility. Due to electrical work at the time of the survey, we were not allowed access into this room.

The primary activity at the Elkins Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is not currently, but may in the future be, rented out for limited civic activities such as group meetings, trade shows and to other related local groups and organizations. The Elkins Readiness Center is currently staffed by eleven personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 01	Assembly Hall - floor	<110 ug/ft^2
Pb – 02	Kitchen - counter	<110 ug/ft^2
Pb – 03	CO Office - air grille	<110 ug/ft^2
Pb – 04	CO Office - desk top	<110 ug/ft^2
Pb – 05	Administrative Office - shelf	<110 ug/ft^2
Pb – 06	Administrative Corridor - floor	<110 ug/ft^2
Pb – 07	Foyer - air vent	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. The paint on the walls appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Elkins Readiness Center during this survey. Thermal system piping is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion during this survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Elkins Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Elkins Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Foyer	0.0	235	76.2	34.6
Room 151 Office Area	0.0	208	77.5	32.9
Room 149 Office Area	0.0	274	77.9	33.3
Administrative Corridor	0.0	288	76.7	36.1
Men's Locker Room	0.0	224	76.5	38.8
Break Room	0.0	216	76.0	41.4
Physical Fitness Room	0.0	263	76.8	37.0

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Classroom	0.0	219	76.2	37.8
Training Room	0.0	225	76.4	36.2
Men's Restroom	0.0	261	75.2	34.1
Assembly Hall	0.0	238	75.6	35.4
Kitchen	0.0	277	76.5	33.9
Maintenance Supply Room	0.0	219	76.9	32.3

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Elkins Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of air handling units that provide fresh air from outside the building exterior to administrative areas.

4.1.2 HVAC Maintenance

The HVAC system is reported to be on a yearly maintenance/service agreement.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Foyer	78.5	Y	5
Room 151 Office Area	68.0	Y	50
Room 149 Office Area	77.1	Y	50
Administrative Corridor	89.2	Y	5
Men's Locker Room	54.6	Y	7
Break Room	94.3	Y	10
Physical Fitness Room	109.2	Y	30
Classroom	57.7	Y	30
Training Room	37.8	Y	30
Men's Restroom	32.9	Y	5
Assembly Hall	110.8	Y	10
Kitchen	64.6	Y	50
Maintenance Supply Room	28.4	Y	10
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Elkins Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Elkins Readiness Center.

AECOM did not observe any damaged, suspect asbestos-containing materials at the Elkins Readiness Center.

AECOM did not observe peeling paint during at the Elkins Readiness Center.

AECOM did not observe evidence of water intrusion at the Elkins Readiness Center.

Lighting levels measured throughout the facility were adequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

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

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

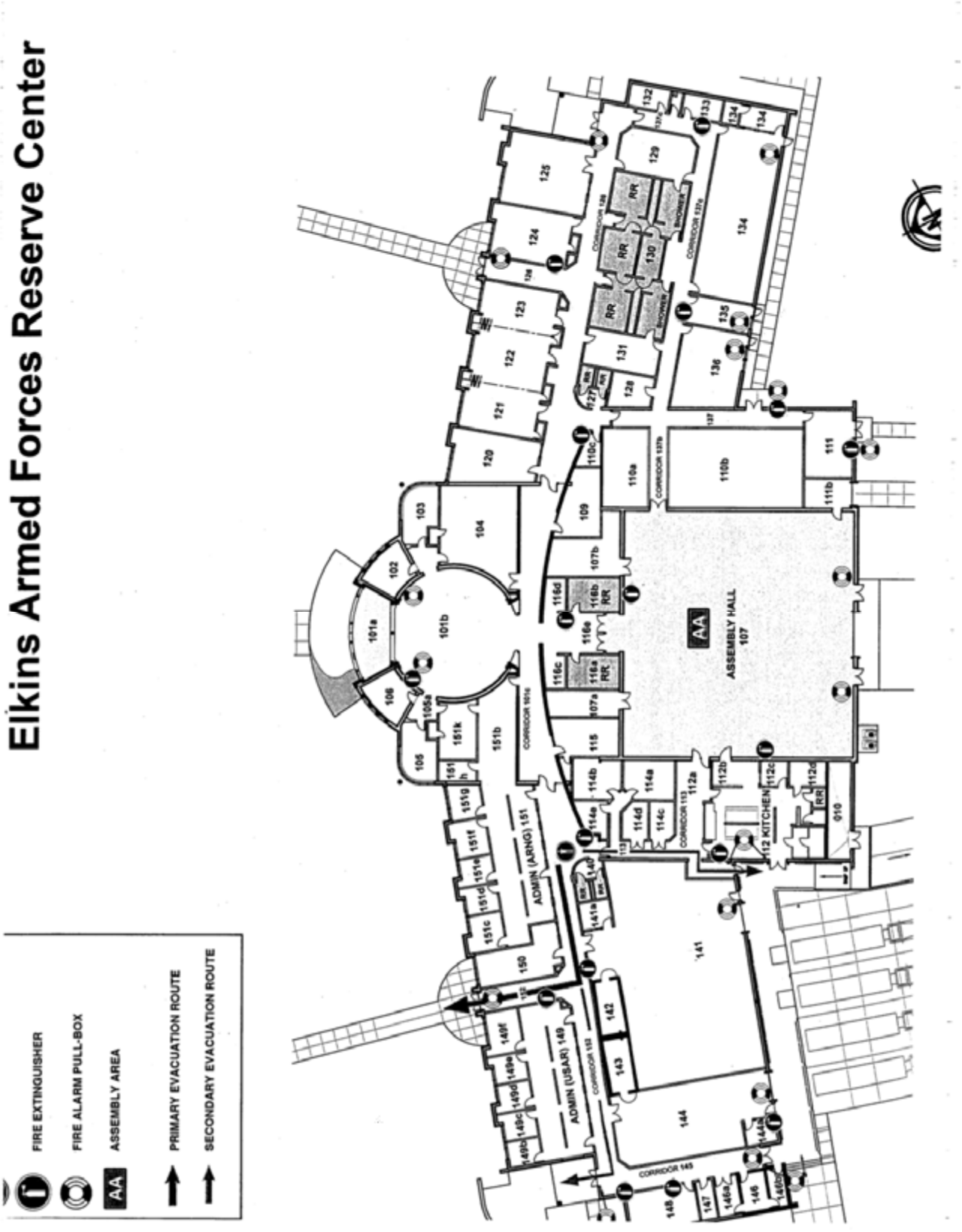
The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may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

Appendix A

Elkins Readiness Center Facility Layout

AECOM

Elkins Armed Forces Reserve Center



Appendix B

Elkins Readiness Center Photographs

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Photograph 1

View of Exterior Building

Photograph 2

View of Assembly Hall

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Photograph 3

View of Assembly Area Lighting/HVAC System

Photograph 4

View of Break Room

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Photograph 5

View of Administrative Corridor

Photograph 6

View of Locker Room

AECOM

Photograph 7

SIM (Firing Range) Entrance

Photograph 8

View of Exercise Room

AECOM

Photograph 9

View of Classroom

Photograph 10

View of Break Room

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Photograph 11

View of Computer Training Classroom

Photograph 12

View of State Maintenance Office

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Photograph 13

View of HVAC in Kitchen

Photograph 14

View of Foyer

Appendix C

Analytical Results

AECOM

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:**	Elkins RC	**Chain Of Custody:**	514248		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Elkins, WV	**Date Submitted:**	10/23/2012		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	AECOM		
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	10/27/2012	**Report Date:**	10/30/2012

Attention: Non-[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		Total ug	Final Result		Comments
13007960	Pb-001	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007961	Pb-002	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007962	Pb-003	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007963	Pb-004	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007964	Pb-005	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007965	Pb-006	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007966	Pb-007	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

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

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

Analyst: Non-[redacted]

Technical Manager: Non-Responsive [redacted]

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AECOM

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)

514248

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

Submittal Information:
1. Job Name: ELKINS RC
2. Job Location: ELKINS, WV
3. Job #: P.O. #: W912K8-09-A-0002
4. Contact Perso Non-Responsive Non-Responsive
5. Submitted by: AECOM (Signature)

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day ts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Er Non-Responsive ecom.com
Comments:	☐ 2 Day (Date Due) 10/30/12	☐ Fa s.army.mil
		☐ Ve 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) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

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

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

Metals Analysis
☐ Pb Paint Chip (QTY)
☐ *Pb Dust Wipe (wipe type) 7 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WATER AND OTHER	SPORE TRAP	TAPE	SWAB
	SEE ATTACHED FIELD DATA SHEETS														

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

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/30/12 @ Via: By (Print)
2. Date/Time Analyzed: / / @ By (Print)
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/16/12
Job Number: 60275401
Contact Person: Non-Responsive

Job Name: ELKINS RC
Job Location: ~~20~~
Address: 201 Caisson Dr. ELKINS, WV

Company: AECOM
Phone Number: 3154320526
Collected By: Non-Responsiv
COC Number: —

Page 1 of 1

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	DRILL HALL	FLOOR	16 in^2	ghost wipe
Pb-002	KITCHEN	Dusty Surface		
Pb-003	OFFICE	Supply Grille		
Pb-004	OFFICE (C/O)	Desk		
Pb-005	" "	Cabinet		
Pb-006	Admin Corridor	~~Admin~~ FLOOR		
Pb-007	Foyer	Supply Grille		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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Knoxville, TN 37923
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Shaw™ Shaw Environmental, Inc.

National Guard Armory
Fairmont Readiness Center – Fairmont, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

01 June 2004

National Guard Armory
Fairmont Readiness Center – Fairmont, West Virginia

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Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

01 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Fairmont Readiness Center in Fairmont, West Virginia. Non-Responsiv Non-Respon performed the evaluation on 30 October 2003. The point of contact at the readiness center was Majo Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, Officers' latrine, lobby, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. Due to the poor condition of the insulation in the boiler room, a bulk sample was collected, and results revealed that the insulation contained 50-60% asbestos. The exposed asbestos containing insulation material should be repaired. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Water damage was observed at the armory in a locker room. The source of the water damage was likely from condensation/poor ventilation due to the proximity of a shower room. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the armory in a locker room. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential for a mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- Interviews with employees concerning indoor air quality revealed that employees have a concern about radon in the supply room vault. A comprehensive evaluation

should be conducted to determine the radon levels in the vault, and, if radon levels are high, implement corrective actions to eliminate or control the radon exposures.

- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Fairmont Readiness Center in Fairmont, West Virginia. Non-Responsiv Non-Responsiv performed the evaluation on 30 October 2003. The point of contact at the readiness center was Major Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at two locations. Two samples collected from the assembly hall (fire extinguisher cabinet top surface and intercom speaker top surface) had lead concentrations of 570 and 920 $\mu g/ft^2$, respectively. It is recommended that these surfaces and the immediate area around the surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, Officers' latrine (window sill), the lobby (fire extinguisher cabinet top surface), and the converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory on the locker room ceiling. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that the lead concentration at the location was below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles in the copier room (approximately 189 square feet). The condition of the floor tiles was considered good. In addition, suspected asbestos containing material in the form of insulation was observed in the boiler room on approximately forty-three pipe joints or

elbows and duct work (approximately 15 linear feet). It could also be assumed that the suspected asbestos containing insulation remains in the pipe joints/elbows throughout the facility. The condition of the insulation materials was considered good (no rips, tears, or other damage) in most locations with the exception of the insulation on the ductwork; therefore, a bulk sample was collected. The results revealed asbestos in the form of Chrysotile at 50-60 % in the gray fibrous/crumbly material. The results are provided in Appendix C.

The exposed asbestos containing insulation material should be repaired. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage and mold on the ceiling of the locker room (behind the bleachers).

The source of the water damage was likely from condensation and poor ventilation as the locker room is adjacent to a shower room. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential for a mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Measurements for carbon dioxide, humidity, and temperature revealed no indoor air quality concerns at the armory. However, interview with employees revealed that there is a concern about radon in the supply room vault. There are no active radon detectors in the room and the procedure, to "air out" the supply vault for ten minutes prior to entry is not always feasible. A comprehensive evaluation should be conducted to determine the radon levels in the vault, and, if radon levels are high, implement corrective actions to eliminate or control the radon exposures.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 5. As can be seen from the results, the lighting did not meet the minimum requirements in many areas, including the Maintenance Bay (workbench), women's latrines on the first and second floors, men's room on the second floor, kitchen (Mess Hall), day room, and classroom (distant learning computer room).

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The room was converted into a maintenance bay. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at less than 2.7 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 860 $\mu g/ft^2$;
- bullet trap floor at 570 $\mu g/ft^2$ (sand had been removed);
- bullet trap wall at 370 $\mu g/ft^2$;
- stored item (filing cabinet top surface) at 430 $\mu g/ft^2$; and
- light fixture at 820 $\mu g/ft^2$.

The lead levels at all of these locations, except the sample collected outside of the firing range, were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below

recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

2.9. HVAC System

The maintenance schedule for the HVAC system was evaluated to verify that maintenance occurs on a regular basis. Also, the condition of the HVAC system was evaluated to determine if the maintenance performed is effective. It was deemed that maintenance occurs on a regular basis, and the maintenance performed is effective.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, housekeeping, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, visible mold, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Fairmont, West Virginia
Date of Sampling: 30 October 2003

Sample Number	Location	Results,µg/ft² [1]
WVFAI303-7	Assembly room -- supply room serving counter (See Building Layout -- Appendix B)	17
WVFAI303-8	Assembly room -- fire extinguisher cabinet top surface (See Building Layout -- Appendix B)	570
WVFAI303-9	Assembly room -- bleacher (adjacent to garage door) (See Building Layout -- Appendix B)	< 2.7
WVFAI303-10	Assembly room -- bleacher (adjacent to men's latrine) (See Building Layout -- Appendix B)	< 2.7
WVFAI303-11	Assembly room -- intercom speaker top surface (See Building Layout -- Appendix B)	920
WVFAI303-12	Field Blank	< 0.3 µg
WVFAI303-20	First Floor -- mess/kitchen -- stove shelf top surface	3.2
WVFAI303-21	First Floor -- hallway -- amnesty box top surface	29
WVFAI303-22	First Floor -- HQBTRY Orderly Room -- closet top surface	8.4
WVFAI303-24	Field Blank	< 0.3 µg
WVFAI303-25	First Floor -- Supply Room - desktop	12
WVFAI303-26	First Floor -- Computer room (distant learning center) windowsill	17
WVFAI303-27	First Floor -- BATTN OPS -- computer monitor top surface	4.6
WVFAI303-28	First Floor -- BATTN OPS/TNG -- cabinet top surface	11
WVFAI303-29	First Floor -- Officer's rest room -- window sill	120
WVFAI303-30	Field Blank	< 0.3 µg
WVFAI303-31	First Floor -- lobby -- fire extinguisher door top surface	82
WVFAI303-32	Second Floor -- concession stand -- counter top surface	3.6

[1] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Fairmont, West Virginia
Date of Sampling: 30 October 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVFAI303-A1	Non-Responsive	1258-1515/137	2.879	394.42	<0.003
WVFAI303-A2		1257-1515/138	2.4734	341.33	<0.003
WVFAI303-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Fairmont, West Virginia
Date of Sampling: 30 October 2003

Sample Number	Location	Results, % By Weight
WVFA1303-PC1	Locker room ceiling (behind bleachers)	0.0054

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4

Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature

National Guard Armory

Fairmont, West Virginia

Date of Sampling: 30 October 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Drill Hall	1	537	36.8	70.3
2nd Floor Concession Stand	2	548	38.4	73.8
Outdoors	-	481	45.2	70.9

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Fairmont, West Virginia

Date of Sampling: 30 October 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
First Floor Locker Room (adjacent to Men's Latrine)	4.6-48.1	40	Some areas
First Floor Supply Room (office area)	18.6-74.3	70	Some areas
First Floor Maintenance Bay (workbench)	14.6-55.3	70	No
First Floor Women's Latrine	6.87-25.6	40	No
First Floor Kitchen (Mess Hall)	13.6-41	70	No
First Floor HQ BTRY. Day Room	20.1-37.1	70	No
First Floor - HQ BTRY Orderly Room	65.1-89.6	70	Some areas
First Floor Classroom (Distant Learning Computer Room)	40.3-68.1	70	No
First Floor - Main Hallway	4.96-19.7	7.5	Some areas
Second Floor - Women's Latrine	3.1-12.3	40	No
Second Floor - Men's Latrine	1.0-3.45	40	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Fairmont, West Virginia

Date of Sampling: 30 October 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVWES302-13	Floor Outside of Range	< 2.7
WVWES302-14	Floor	860
WVWES302-15	Bullet Trap Floor	570
WVWES302-16	Bullet Trap Wall	370
WVWES302-17	Stored Item - - filing cabinet top surface	430
WVWES302-18	Blank	< 0.3 µg
WVWES302-19	Light Fixture	820

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Fairmont Armory West Virginia ARNG	Fairmont

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Ops / ADO

URVEY DATE	EVALUATOR (Initials)
30 October 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive MAJ

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 363 1010	HHB, 1st Bn, 201st FA	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	10	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video display Terminal noise	3-low	B-Uncontrolled Physical
7439-92-1	Lead dust & fumes, as Pb	2-Moderate	C-Uncontrolled Respiratory
12001-29-5	Asbestos (Chrysotile)	1-high	C Uncontrolled Respiratory
0332-21-4	Asbestos (other	2 moderate	C Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
please see employee list attached,	none			ssn not available	

SECTION 6. COMMENTS

___No comments See attached sheet

Asbestos survey conducted survey - Building contains 10 (ten) full time military employees and 1 (one) civilian contractor. Military employees perform primary administrative functions

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

HHB, 1st Bn, 201st FA

Date: 30 October 2003

To: Whom it may concern

Cc:

RE: **Full Time Employees**

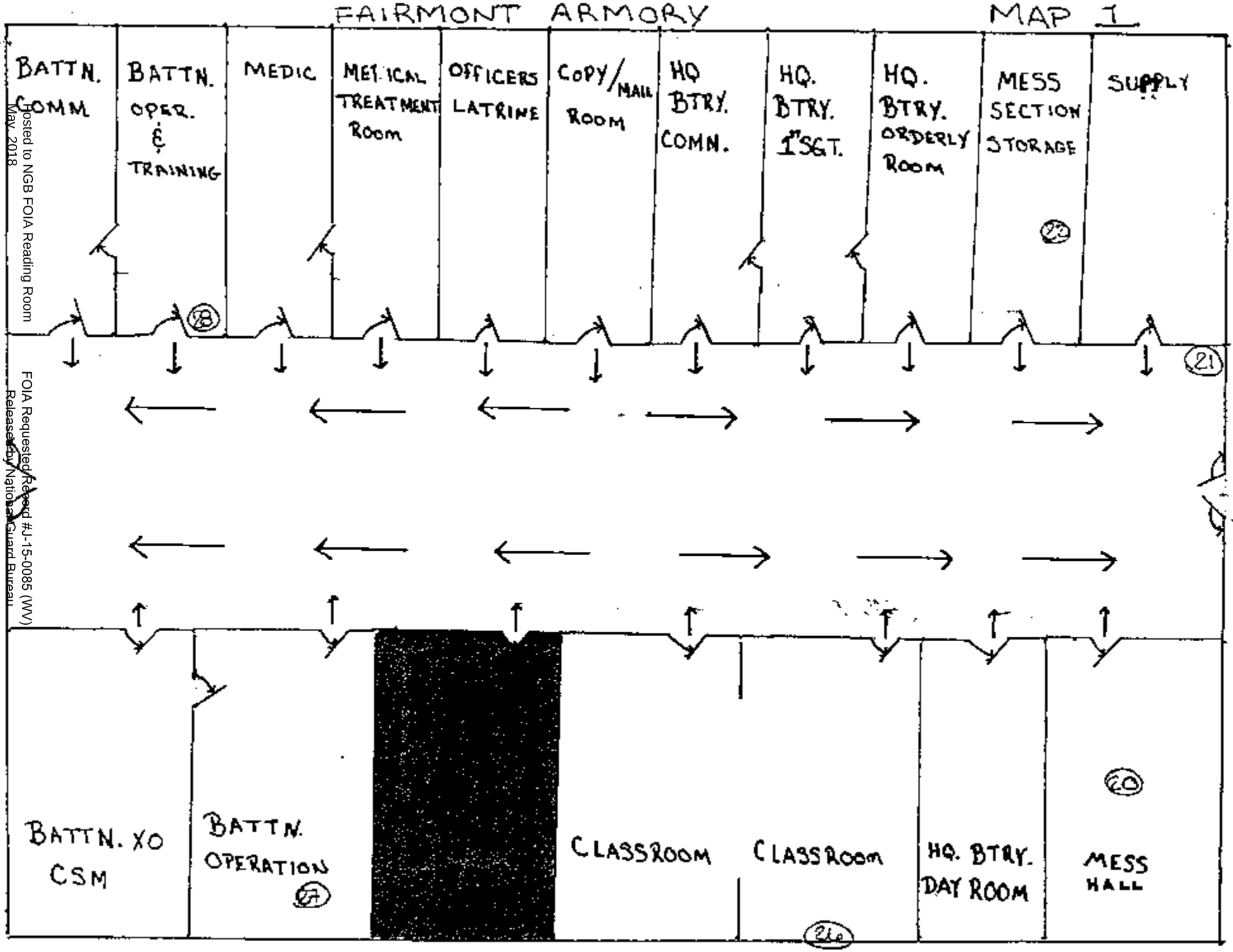
The following is a list of full time employees at the Fairmont Armory

Non-Responsive

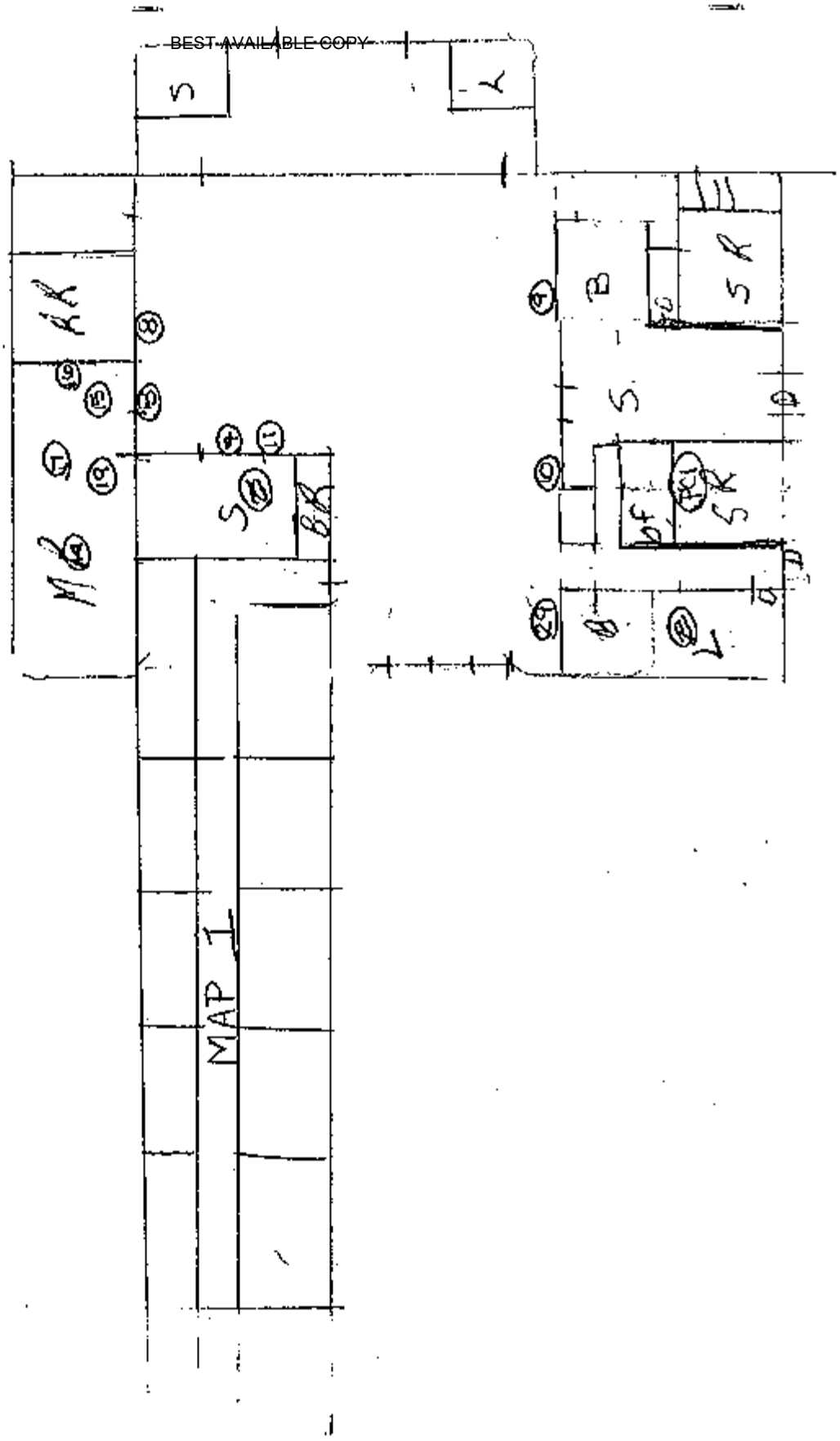
Non-Responsive

Non-Responsive Caretaker

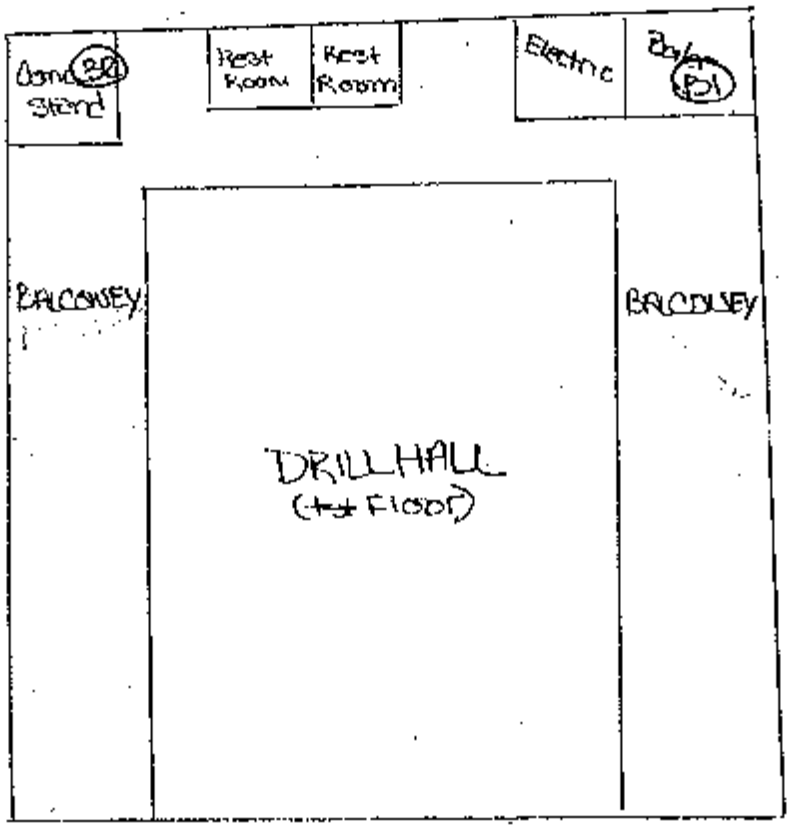
Appendix B
Building Layout



FAIRMONT ARMORY
MAP 2



FAIRMONT ARMORY
MAP 3
(2nd Floor)



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Fairmont	**Chain Of Custody:**	119267
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/20/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	20-Nov-03

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0408615	WVFAI303-7	Furnace	Wipe	****	0.111	5.40	ug/ft²	17	ug/ft²	
0408616	WVFAI303-8	Flame	Wipe	****	0.111	108.01	ug/ft²	570	ug/ft²	
0408617	WVFAI303-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0408618	WVFAI303-10	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0408619	WVFAI303-11	Flame	Wipe	****	0.111	108.01	ug/ft²	920	ug/ft²	
0408620	WVFAI303-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408621	WVFAI303-13	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0408622	WVFAI303-14	Flame	Wipe	****	0.111	108.01	ug/ft²	860	ug/ft²	
0408623	WVFAI303-15	Flame	Wipe	****	0.111	108.01	ug/ft²	570	ug/ft²	
0408624	WVFAI303-16	Flame	Wipe	****	0.111	108.01	ug/ft²	370	ug/ft²	
0408625	WVFAI303-17	Flame	Wipe	****	0.111	108.01	ug/ft²	430	ug/ft²	
0408626	WVFAI303-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408627	WVFAI303-19	Flame	Wipe	****	0.111	108.01	ug/ft²	820	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

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Fairmont	**Chain Of Custody:**	119267
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/20/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	20-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Final Result	Comments

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

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

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

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

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

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

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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:**	WVFAI303	**Chain Of Custody:**	121272
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Fairmont	**Date Analyzed:**	12/30/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	30-Dec-03
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
0413672	WVFAI303-20	Furnace	Wipe	****	0.111	2.70	ug/ft²	3.2	ug/ft²	
0413673	WVFAI303-21	Furnace	Wipe	****	0.111	6.75	ug/ft²	29	ug/ft²	
0413674	WVFAI303-22	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.4	ug/ft²	
0413675	WVFAI303-24	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413676	WVFAI303-25	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0413677	WVFAI303-26	Furnace	Wipe	****	0.111	6.75	ug/ft²	17	ug/ft²	
0413678	WVFAI303-27	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.6	ug/ft²	
0413679	WVFAI303-28	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	ug/ft²	
0413680	WVFAI303-29	Furnace	Wipe	****	0.111	67.51	ug/ft²	120	ug/ft²	
0413681	WVFAI303-30	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413682	WVFAI303-31	Furnace	Wipe	****	0.111	67.51	ug/ft²	82	ug/ft²	
0413683	WVFAI303-32	Furnace	Wipe	****	0.111	2.70	ug/ft²	3.6	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]

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Fairmont
Date: 10/30/2003

Sample 1

Sample Number: WVFAI303-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.969	2.786
	2.962	2.804
	2.955	2.811
	2.946	2.799
Average	**2.958**	**2.800**

Average Pre and Post 2.8790

Time 1 12:58
Time 2 15:15
Total Time Sampled **2:17**
Minutes Sampled 137.00

Volume **394.42 Liters**

Sample 2

Sample Number: WVFAI303-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.486	2.458
	2.486	2.452
	2.485	2.462
	2.486	2.472
Average	**2.486**	**2.461**

Average Pre and Post 2.4734

Time 1 12:57
Time 2 15:15
Total Time Sampled **2:18**
Minutes Sampled 138.00

Volume **341.33 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** FAIRMONT
Date: 10/30/03

Sample 1

Sample Number: A1 (WVFA1308)
Pump: 647616B4

	Pre Flow Rate	Post Flow Rate
	2965	2.786
	2962	2.804
Average	2965	2.811
	55	
Average Pre and Post	2946	2.799
	2957	2.800

Time 1 1258
Time 2 1515
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2

Sample Number: WVFA1308-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2486	2.458
	2486	2.452
Average	2485	2.468
	2486	2.472
Average Pre and Post	2486	2.461

Time 1 1253/67
Time 2 1515
Total Time Sampled
Minutes Sampled

Volume **Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVKIN312-PC1 hrough WVHUN309-PC1
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33113 through 03-33136
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/2003
Analysis Date:	11/13/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

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513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 260-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVKIN312-PC1	03-33113	170.	0.017
WVCLA302-PC1	03-33114	ND	ND
VWBUC301-PC1	03-33115	33.	0.0033
VWBUC301-PC2	03-33116	76.	0.0076
VWBUC301-PC3	03-33117	ND	ND
WVGAS310-PC1	03-33119	64.	0.0064
WVELK301-PC1	03-33120	68.	0.0068
WVELK301-PC2	03-33121	1700.	0.17
WVKEY300-PC1	03-33124	1400.	0.14
VWKEY300-PC2	03-33125	1800.	0.18
WVWES708-PC1	03-33129	110.	0.011
WVWES708-PC2	03-33130	71000.	7.1
WVFAI303-PC1	03-33131	54.	0.0054
WVSAI303-PC1	03-33133	900.	0.090
WVSAI303-PC2	03-33134	250.	0.025
WVSAI303-PC3	03-33135	1200.	0.12
WVHUN309-PC1	03-33136	ND	ND
	Prep Blank	ND	
% Recovery	LCS	82.	
% Recovery	32912MS	87.	
% Recovery	32912MSD	89.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:

Non-Responsive

Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	WVKIN312-B1 through WVFAI303-BI
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-5546
DCL Sample ID No.:	03-33112 through 03-33132
Sample Receipt Date:	11/12/03
Analysis Date:	11/13/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive

Analyst

Non-Responsive

Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

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NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVKIN312-B1	WVBUC301-B1	WVBUC301-B1	WVPHR308-B1	WVSAL303-B1
DCL Sample ID:	03-33112	03-33118A	03-33118B	03-33122	03-33123
Macroscopic Examination					
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Layered	Layered	Homog.	Layered
Color:	Grey	Green	Black	Grey	Inseparable Red/Black
Texture:	Crmby/Fbrs	Compact	Resinous	Fbrs/Crmby	Cmpt/Resns
Description:	Material	Tile	Mastic	Material	Tile/Mastic
Analysis:	PLM	PLM	PLM	PLM	PLM
Asbestiform Minerals					
% Chrysotile:	>20≤30	>1≤3	>3≤5	>10≤20	>1≤3
% Amosite:					
% Crocidolite:					
% Tremolite - Actinolite:					
% Anthophyllite:					
% Total Asbestos:	**>20≤30**	**>1≤3**	**>3≤5**	**>10≤20**	**>1≤3**
Other Materials					
% Cellulose:			>1≤3		
% Fiberglass:				>40≤50	
% Other Fibers:					
% Resin/Binder:		>10≤20	>70≤80		>20≤30
% Non Fibrous:	>60≤70	>70≤80	>10≤20	>20≤30	>60≤70

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVMOU307-B1	WVMOR304-B1	WVSPE310-B1	WVFAI303-B1
DCL Sample ID:	03-33126	03-33127	03-33128	03-33132
Macroscopic Examination				
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Homog.	Homog.	Homog.
Color:	Brown	Grey	Grey	Grey
Texture:	Compact	Crmby/Fbrs	Crmby/Fbrs	Fbrs/Crmby
Description:	Tile	Material	Material	Material
Analysis:	PLM	PLM	PLM	PLM
Asbestiform Minerals				
% Chrysotile:	>1≤3	>20≤30	Trace	>50≤60
% Amosite:				
% Crocidolite:				
% Tremolite - Actinolite:				
% Anthophyllite:				
% Total Asbestos:	**>1≤3**	**>20≤30**	**Trace**	**>50≤60**
Other Materials				
% Cellulose:				
% Fiberglass:			>30≤40	
% Other Fibers:				
% Resin/Binder:	>10≤20			
% Non Fibrous:	>70≤80	>60≤70	>50≤60	>30≤40

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 07 July 2004

MEMORANDUM FOR WVARNG, Gassaway/Braxton County Readiness Center, ATTN: SGT Non-Responsive 1072 State Street, Gassaway, WV 26624-0397

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive
Regional Industrial Hygienist

Encl

CF: OHM, MAJ Non-Responsive

National Guard Armory
Braxton County Readiness Center
Gassaway, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned. **RAC - 4**
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, classroom/dining room, supply room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Materials suspected of containing asbestos were observed. It is recommended that an operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials. **RAC - 5**
- Water damage was observed at the armory in the hallway leading to the dressing room. The source of the water damage was likely from roof leaks between the old and new addition. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems. **RAC - 5**
- Measurements for humidity revealed that levels exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 60% in the armory. Since there is no HVAC system at the armory, it is recommended that a dehumidification system be installed at the armory. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE

WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD

OTSG APPROVED (Date)

DIRECTORATE Braxton County Armory BLDG/ROOM Gassaway

SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study

JOB DESCRIPTION/SERIES Military/Administrative Operations

SAMPLING DATE November 6, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.004	<0.004	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive ndustrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility)

NAME Non-Responsive SGT: 11/6/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: Unavailable		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-364-5231		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 4700
1 MAY 78

HSXR-APG-Z OP 32 1 Jan 90

BEST AVAILABLE COPY

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE	OTSG APPROVED (Date)
WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD	

DIRECTORATE Braxton County Armory BLDG/ROOM Gassaway

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SAMPLING DATE November 6, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.004	<0.004	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive Industrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility)

NAME: Non-Responsive SSG: 11/6/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: Unavailable		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-364-5231		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 4700 EMAY 78

HSXR-APG-Z OP 32 1 Jan 90

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Braxton County Readiness Center – Gassaway, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Braxton County Readiness Center – Gassaway, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Braxton County Readiness Center in Gassaway, West Virginia. Non-Responsive performed the evaluation on 06 November 2003. The point of contact at the readiness center was SGT Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs

- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Converted Indoor Firing Range
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, classroom/dining room, supply room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials suspected of containing asbestos were observed. It is recommended that an operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory in the hallway leading to the dressing room. The source of the water damage was likely from roof leaks between the old and new addition. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Measurements for humidity revealed that levels exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 60% in the armory. Since there is no HVAC system at the armory, it is recommended that a dehumidification system be installed at the armory.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls

with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Braxton County Readiness Center in Gassaway, West Virginia. Non-Responsive performed the evaluation on 06 November 2003. The point of contact at the readiness center was SGT Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at two locations. Two samples collected from the assembly hall control box top surface and bleacher seat surface had lead concentrations of 480 and 680 $\mu g/ft^2$, respectively. It is recommended that these surfaces and the immediate area around the surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NGB PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, classroom/dining room, supply room, and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory on the window frames in the kitchen and classroom/dining room. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that the lead concentration at the location was below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing material was pipe insulation remaining in pipe elbows/joints in the drill hall. It could also be assumed that the suspected asbestos containing insulation remains in the pipe joints/elbows throughout the facility with the exception of the boiler room. . The condition of the insulation

materials was considered good (no rips, tears, or other damage). Please note that the boiler room piping insulation was not suspected of containing asbestos material.

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. No mold was observed, however, the inspection revealed water damage on the ceiling and wall of the hallway leading to the dressing room.

The source of the water damage was likely from roof leaks between the new and old addition of the building. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interviews with employees and measurements for carbon dioxide and temperature revealed no indoor air quality concerns at the armory. However, measurements for humidity revealed that levels exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 60% in the armory. Since there is no HVAC system at the armory, it is recommended that a dehumidification system be installed at the armory. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 5. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the classroom/dining room, kitchen, male and female restrooms, and supply (office area).

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The bullet trap is the only remnant of the former firing range; the former firing range consisted of a portion of the drill hall floor and the bullet trap. The bullet trap space was converted into a storage room. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 11 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 46 $\mu g/ft^2$; and
- stored item (cabinet top surface) at 45 $\mu g/ft^2$.

The lead levels at these locations were below the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army); therefore, no actions are necessary. However, the lead levels at two of these locations were above a level of 40 $\mu g/ft^2$. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, housekeeping, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, surface lead contamination in the converted firing range, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, indoor air quality, and lighting. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Gassaway, West Virginia
Date of Sampling: 06 November 2003

Sample Number	Location	Results,µg/ft² [a]
WVGAS310-7	Assembly room – vending machine top surface (See Building Layout – Appendix B)	43
WVGAS310-8	Assembly room – control box top surface (See Building Layout – Appendix B)	480
WVGAS310-9	Assembly room – bleacher seat surface (See Building Layout – Appendix B)	680
WVGAS310-10	Assembly room – bleacher seat surface (See Building Layout – Appendix B)	15
WVGAS310-11	Assembly room – bleacher seat surface (See Building Layout – Appendix B)	4.2
WVGAS310-12	Field Blank	< 0.3 µg
WVGAS310-15	Concession – soda machine top surface	6.1
WVGAS310-16	Kitchen – stove top shelf surface	< 2.7
WVGAS310-17	Office (Door #2) – shelf surface	5.5
WVGAS310-18	Field Blank	0.41 µg
WVGAS310-19	Classroom/Dining – window sill	77
WVGAS310-20	Locker Room – gym equipment surface	30
WVGAS310-21	Supply Room – desktop	41

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Gassaway, West Virginia
Date of Sampling: 06 November 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVGAS310-A1	Non-Responsive	1313-1500/107	2.4516	262.32	<0.004
WVGAS310-A2		1313-1500/107	2.4741	264.73	<0.004
WVGAS310-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Gassaway, West Virginia
Date of Sampling: 06 November 2003

Sample Number	Location	Results, % By Weight
WVGAS310-PC1	Classroom/Dining room – window frames	0.0064

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Gassaway, West Virginia
Date of Sampling: 06 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Office (Door #1)	2	555	72.0	70.0
Outdoors	-	511	92.8	64.2

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Gassaway, West Virginia

Date of Sampling: 06 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Classroom/Dining Room	28.3-50.1	70	No
Kitchen	11.5-17.9	70	No
Restroom (Male)	4.98-16.9	40	No
Restroom (Female)	0.7-4.9	40	No
Office (Door #1)	28.7-81.5	70	Some Areas
Supply (Office Area)	18.3-38.7	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Gassaway, West Virginia

Date of Sampling: 06 November 2003

Sample Number	Location	Results, $\mu g/ft^{2}$ [a]
WVGAS310-2	Floor Outside of Range	11
WVGAS310-13	Floor	46
WVGAS310-14	Stored Item shelf top	45

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Braxton County Armory West Virginia ARNG	Gassaway

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
06 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SGT

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 364 5231	CO A (-DET 1) 1092D ECB(C)	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	2	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U
ACID		
COLD SURFACES		
HOT SURFACES		
NBC AGENTS		
OIL		
SOLVENTS		
SURGICAL GLOVES		

RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
AIRLINE				
ABRASIVE BLASTING HOOD				
DISPOSABLE				
FULL FACE AIR PURIFYING				
1/2 FACE AIR PURIFYING				
POWERED AIR PURIFYING				
1/4 FACE AIR PURIFYING				
SELF CONTAINED				

EYES/FACE	R	U
CHEMICAL SPLASH		
FULL FACE SHIELD		
CHEMICAL/SAFETY		
SAFETY/IMPACT		
WELDING HELMET		

HEARING	R	U
CANAL CAPS		
EAR PLUGS		
HELMETS		
MUFFS		
MUFF/EARPLUG COMBO		
MUFF/EARPLUG W/TIME LIMIT		

BODY	R	U
APRONS		
COLD WEATHER CLOTHING		
COVERALLS		
FULL BODY SUIT		
HEAT REFLECTIVE VEST/SUIT		
SAFETY BELT/HARNESS		

HEAD/FIT	R	U
COLD WEATHER BOOTS/HATS		
HARD HATS		
IMPERMEABLE BOOTS		
SAFETY/CONDUCTIVE SHOES		
SAFETY/NON-CONDUCTIVE SHOES		

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D Uncontrolled Physical
7439-92-1	Lead Inorganic dust & Fumes, as Pb	2-Moderate	C Uncontrolled Respiratory
1332-21-4	Asbestos (other)	2-Moderate	C Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAILABLE	MIL
		S	↓	↓	↓
			↓	↓	CIV

SECTION 6. COMMENTS

No comments ~~See attached sheet~~

Unit is comprised of 1 civilian caretaker, 2 full time military employees and 4 military full-time staff perform primarily administrative functions

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout

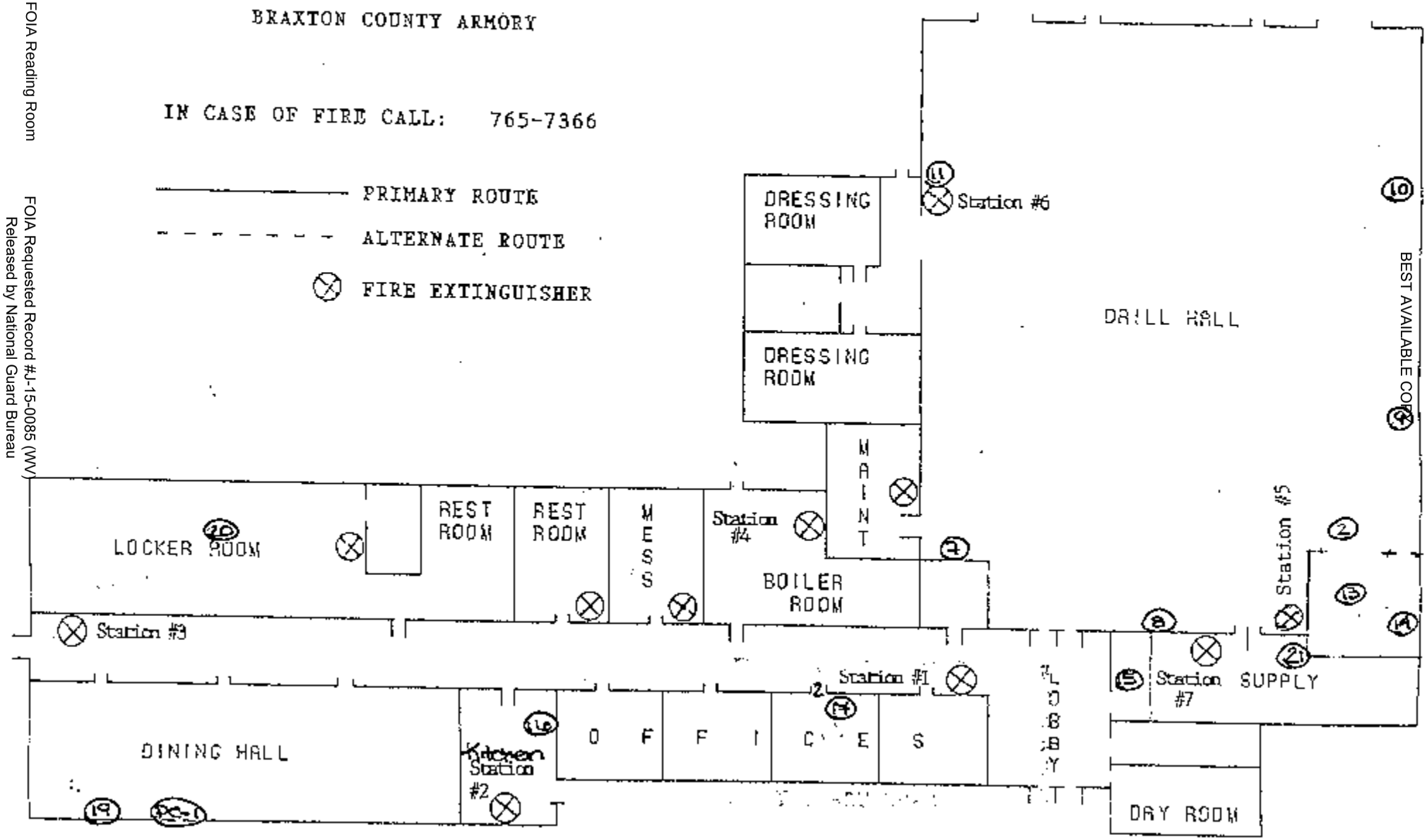
BRAXTON COUNTY ARMORY

IN CASE OF FIRE CALL: 765-7366

PRIMARY ROUTE

ALTERNATE ROUTE

FIRE EXTINGUISHER



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Gassaway	**Chain Of Custody:**	119263
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0408594	WVGAS310-7	Furnace	Wipe	****	0.111	13.50	ug/ft²	43	ug/ft²	
0408595	WVGAS310-8	Flame	Wipe	****	0.111	108.01	ug/ft²	480	ug/ft²	
0408596	WVGAS310-9	Flame	Wipe	****	0.111	108.01	ug/ft²	680	ug/ft²	
0408597	WVGAS310-10	Furnace	Wipe	****	0.111	2.70	ug/ft²	15	ug/ft²	
0408598	WVGAS310-11	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.2	ug/ft²	
0408599	WVGAS310-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408600	WVGAS310-13	Furnace	Wipe	****	0.111	13.50	ug/ft²	46	ug/ft²	
0408601	WVGAS310-14	Furnace	Wipe	****	0.111	13.50	ug/ft²	45	ug/ft²	
0408602	WVGAS310-2	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	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: Non-Responsive **Technical Manager:** Non-Responsive

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:**	WVGAS310	**Chain Of Custody:**	121270
Address:	301-lH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Gassaway	**Date Analyzed:**	12/30/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	30-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413652	WVGAS310-15	Furnace	Wipe	****	0.111	2.70	ug/ft²	6.1	ug/ft²	
0413653	WVGAS310-16	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0413654	WVGAS310-17	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.5	ug/ft²	
0413655	WVGAS310-18	Furnace	Wipe Blank	****	N/A	0.30	ug	0.41	ug	
0413656	WVGAS310-19	Furnace	Wipe	****	0.111	13.50	ug/ft²	77	ug/ft²	
0413657	WVGAS310-20	Furnace	Wipe	****	0.111	6.75	ug/ft²	30	ug/ft²	
0413658	WVGAS310-21	Furnace	Wipe	****	0.111	6.75	ug/ft²	41	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: Non-Responsive

Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive

Analyst

Non-Responsive

Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]

Analyst

Non-Responsive [redacted]

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory Location: Gassaway
Date: 11/6/2003

Sample 1

Sample Number: WVGAS310-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.493	2.401
	2.495	2.433
	2.483	2.412
	2.486	2.41
Average	**2.489**	**2.414**

Average Pre and Post **2.4516**

Time 1	13:13
Time 2	15:00
Total Time Sampled	**1:47**
Minutes Sampled	107.00

Volume **262.32 Liters**

Sample 2

Sample Number: WVGAS310-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.513	2.435
	2.511	2.455
	2.505	2.436
	2.503	2.435
Average	**2.508**	**2.440**

Average Pre and Post **2.4741**

Time 1	13:13
Time 2	15:00
Total Time Sampled	**1:47**
Minutes Sampled	107.00

Volume **264.73 Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	Lead
Client Sample No.:	WVKIN312-PC1 hrough WVHUN309-PC1
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33113 through 03-33136
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/2003
Analysis Date:	11/13/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
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513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-6071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVKIN312-PC1	03-33113	170.	0.017
WVCLA302-PC1	03-33114	ND	ND
VWBUC301-PC1	03-33115	33.	0.0033
VWBUC301-PC2	03-33116	76.	0.0076
VWBUC301-PC3	03-33117	ND	ND
WVGAS310-PC1	03-33119	64.	0.0064
WVELK301-PC1	03-33120	68.	0.0068
WVELK301-PC2	03-33121	1700.	0.17
WVKEY300-PC1	03-33124	1400.	0.14
VWKEY300-PC2	03-33125	1800.	0.18
WVWES708-PC1	03-33129	110.	0.011
WVWES708-PC2	03-33130	71000.	7.1
WVFAI303-PC1	03-33131	54.	0.0054
WVSAI303-PC1	03-33133	900.	0.090
WVSAI303-PC2	03-33134	250.	0.025
WVSAI303-PC3	03-33135	1200.	0.12
WVHUN309-PC1	03-33136	ND	ND
	Prep Blank	ND	
% Recovery	LCS	82.	
% Recovery	32912MS	87.	
% Recovery	32912MSD	89.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Gassaway Readiness Center
62 John O'Frame Drive
Gassaway, West Virginia 26624

AECOM
December 2012
Document No.: 60275401.1/Gassaway Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Gassaway Readiness Center
62 John O'Frame Drive
Gassaway, West Virginia 26624

Non-Responsive
Industrial Hygienist

Non-Responsive
Project Manager

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Gassaway Readiness Center

AECOM

Contents

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Executive Summary

On October 17, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Gassaway Readiness Center facility located at 62 John O'Frame drive in Gassaway, West Virginia. Non-Responsive, CPT was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Gassaway Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Gassaway Readiness Center is currently staffed by ten personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and an Assembly/Drill Hall.

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

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

The Gassaway Readiness Center is housed in a one-story masonry building, and consists of approximately 60% administrative space and 40% Assembly Hall.

Lighting levels measured throughout the facility were generally adequate as per American National Standards Institute (ANSI) / Illuminating Engineering Society of North America (IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust throughout the facility did not indicate lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Gassaway Readiness Center at the time of the survey.

No visible damaged friable suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed at the Gassaway Readiness Center.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of air handling units that provide fresh air from outside the building exterior to administrative areas. According to site personnel, the former boiler was removed in 2008 and replaced with the current HVAC system. There are three units that heat and cool all areas of the Gassaway Readiness Center facility.

1.0 Facility Description and Operations

The Gassaway Readiness Center, constructed in 1956, is a one-story administrative facility slab on-grade masonry structure with a two-story Assembly/Drill Hall. The administrative section of the building was improved in 2010 to include additional office space, a larger locker room, restrooms, and storage space. The larger one-story section consists primarily of offices and administrative areas, and is finished with sheetrock walls, lay-in ceiling tiles and floor tile. The two-story Assembly/Drill Hall area is finished with painted block walls and a concrete floor. According to site personnel there is no firing range located at this facility.

The primary activity at the Gassaway Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is frequently rented out for limited civic activities such as group meetings, trade shows, expos, and school activities and to other related local groups and organizations. The Gassaway Readiness Center is currently staffed by ten personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 001	Assembly Hall - table	<110 ug/ft^2
Pb – 002	Kitchen - counter	<110 ug/ft^2
Pb – 003	CO Office - desk top	<110 ug/ft^2
Pb – 004	Recruiter Office - shelf	<110 ug/ft^2
Pb – 005	Administrative Corridor - floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls and ceilings are coated with paint and appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint at the time of the survey.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Gassaway Readiness Center during this survey. Thermal system piping is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion at the time of the survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Gassaway Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Gassaway Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Recruiter Office	0.7	405	73.9	40.1
Administrative Corridor-new	03.	371	73.9	38.6
Men's Restroom	0.4	316	72.8	39.5
Assembly/Drill Hall	0.3	305	72.3	40.7
State Maintenance Office	0.1	318	71.3	40.0
Physical Fitness Room	0.1	317	70.8	39.3
General Office Area	0.1	317	70.7	41.4
Office	0.1	338	70.7	41.5

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Classroom	0.1	308	69.8	41.7
Administrative Corridor-old	0.1	307	69.9	42.3
Library/Meeting Room	0.1	309	71.4	41.2
Kitchen	0.9	355	70.8	43.2
Supply Room	0.4	334	71.1	40.9
Mechanical Room	0.3	321	71.5	40.7

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Gassaway Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Gassaway Readiness Center is heated and cooled by three HVAC systems installed in 2008.

4.1.2 HVAC Maintenance

The HVAC system is approximately 4 years old. Building personnel verified that there is a maintenance schedule in place, and that the filters are changes at least twice yearly.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Recruiter Office	60.4	Y	50
Administrative Corridor-new	93.5	Y	5
Men's Restroom	48.7	Y	5
Assembly/Drill Hall	37.6	Y	10
State Maintenance Office	72.9	Y	50
Physical Fitness Room	46.6	Y	30
General Office Area	43.1	N	50
Office	36.2	N	50
Classroom	24.9	N	30
Administrative Corridor-old	85.2	Y	5
Library	35.9	Y	30
Kitchen	73.2	Y	50
Supply Room	55.3	Y	30
Mechanical Room	40.2	Y	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Gassaway Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Gassaway Readiness Center.

AECOM did not observe any damaged, friable suspect asbestos-containing materials at the Gassaway Readiness Center.

AECOM did not observe peeling lead-based paint at the Gassaway Readiness Center.

AECOM did not observe evidence of water intrusion at the Gassaway Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005 with the exception of three areas noted in Table 5-1.

Wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

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

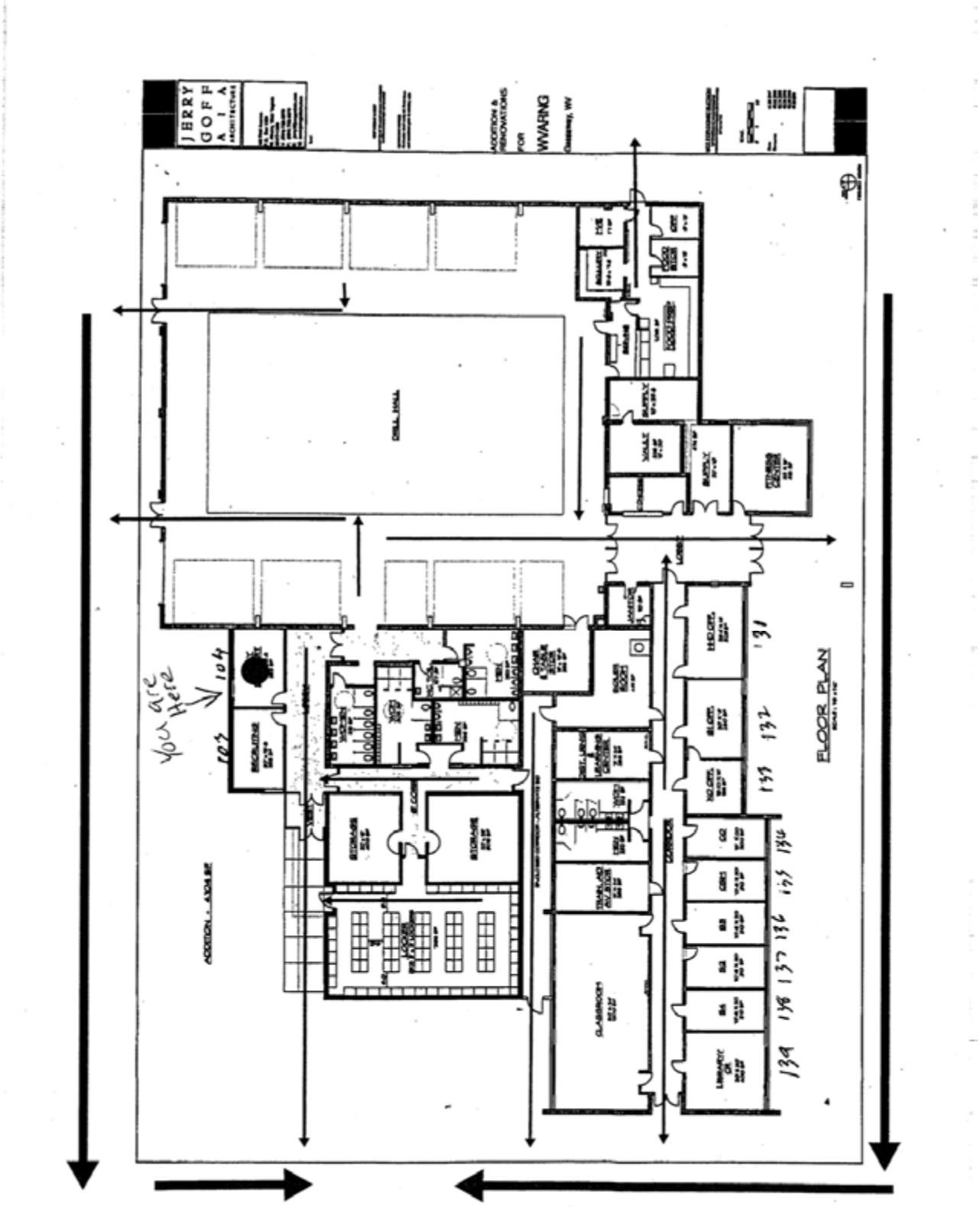
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

Appendix A

Gassaway Readiness Center Facility Layout

AECOM



Appendix B

Gassaway Readiness Center Photographs

AECOM

Photograph 1

View of Building Exterior

Photograph 2

Mechanical Room – Domestic Hot Water On-Demand System

AECOM

Photograph 3

View of Administrative Corridor

Photograph 4

View of Orderly Office Area

AECOM

Photograph 5

View of Physical Fitness Room

Photograph 6

View of Foyer

AECOM

Photograph 7

View of Assembly Hall

Photograph 8

View of Assembly Hall Lighting and HVAC System

AECOM

Photograph 9

View of Kitchen

Photograph 10

Men's Lavatory

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Photograph 11

View of Administrative Corridor

Photograph 12

View of Recruiter Office

Appendix C

Analytical Results

AECOM

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:	Gassaway/Braxton County RC	Chain Of Custody:	514249		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/27/2012	Report Date:	10/30/2012

Attention: Non-

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
13007967	Pb-001	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007968	Pb-002	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007969	Pb-003	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007970	Pb-004	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13007971	Pb-005	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

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

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

Analyst: Non-
R I

Technical Manag Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AECOM

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) 514249

Mailing/Billing Information:

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

Submittal Information:

1. Job Name: GASSAWAY/BRAXTON County RC
2. Job Location: WEST VIRGINIA
3. Job #: PO #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ ph: Non-Responsiv
5. Submitted by: AECOM (Signature): Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive .aecom.com
Comments:	☐ 2 Day (Date Due) 10/30/12 ☐ Results Required By Noon	☐ Fax: us.army.mil
		☐ Verbal: us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)

PLM Bulk
☐ EPA 600 – Visual Estimate ____ (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.6 ____ (QTY)
☐ Other (specify ____) ____ (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan) If field data sheets are submitted, there is no need to complete bottom section.

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area)Dust D6480-99 ____ (QTY)

TEM Water
☐ Qual. (pres/abs) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)

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

Metals Analysis
☐ Pb Paint Chip ____ (QTY)
☐ *Pb Dust Wipe (wipe type: Gloss) 5 (QTY)
☐ *Pb Air ____ (QTY)
☐ Pb Soil/Solid ____ (QTY)
☐ Pb TCLP ____ (QTY)
☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Pb Furnace (Media ____) ____ (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ____
Collection Media ____
☐ *Spore-Trap ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
☐ *Surface Swab ____ (QTY) ☐ Culturable ID Genus (Media ____) ____ (QTY)
☐ *Surface Tape ____ (QTY) ☐ Culturable ID Species (Media ____) ____ (QTY)
☐ Other (Specify ____) ____ (QTY)

CLIENT ID #	SAMPLE INFORMATION / SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 10/30/12 @ 1100 Via: FedEx By (Print): Non-Responsive
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): ____
3. Results Reported To: ____ Via: ____ Date: ____ / ____ / ____ Time: ____ Initials: ____
4. Comments: ____

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/17/12
Job Number: 60275401
Contact Per: Non-Responsive

Job Name: GASSAWAY/Braxton Co. RC
Job Location: WEST VIRGINIA
Address: 62 John O. Frame Dr.
GASSAWAY, WV

Company: AECOM
Phone Number: 3154320500
Collected B: Non-Responsiv
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Dusty Surface	1 in^2	Gauze/Wipe
Pb-002	KITCHEN	Dusty Surface		
Pb-003	C/O OFFICE	Desk		
Pb-004	RECRUITER OFFICE	Cabinet		
Pb-005	Corridor	Floor	"	"
~~Pb-006~~	~~(6)~~			
~~Pb-007~~	~~(6)~~			
~~Pb-008~~	~~(6)~~			
~~Pb-009~~	~~(6)~~			

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 07 July 2004

MEMORANDUM FOR WVARNG, Hinton Readiness Center, ATTN: SGT Non-Responsive Non-Responsive HC 77, Box 166, Hinton, WV 25951-9624

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive
Regional Industrial Hygienist

Encl

CF: OHM, MAJ Non-Responsive

National Guard Armory
Hinton Readiness Center, Hinton, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Measurements for humidity revealed levels that did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in any of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible. **RAC - 4**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE	OTSG APPROVED (Date)
WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD	

DIRECTORATE Hinton Armory BLDG/ROOM Hinton

SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study

JOB DESCRIPTION/SERIES Military/Administrative Operations

SAMPLING DATE December 5, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.004	<0.004	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive ndustrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility)

NAME: Non-Responsive 2/5/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: Non-R i		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-466-1861		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 1 MAY 73 4700

HSXR-APG-Z OP 32 1 Jan 90

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE	OTSG APPROVED (Date)
WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD	

DIRECTORATE Hinton Armory BLDG/ROOM Hinton

SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study

JOB DESCRIPTION/SERIES Military/Administrative Operations

SAMPLING DATE December 5, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.004	<0.004	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non- Industrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (*For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility*)				
NAME: Non-Responsive 12/5/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: Non-		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-466-1861		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 4700
1 MAY 78
HSXR-APG-Z OP 32 1 Jan 90

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Hinton Readiness Center – Hinton, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

5 June 2004

National Guard Armory
Hinton Readiness Center – Hinton, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Hinton Readiness Center in Hinton, West Virginia Non-Responsive performed the evaluation on 05 December 2003. The point of contact at the readiness center was SGT Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping

- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Measurements for humidity revealed levels that did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in any of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Hinton Readiness Center in Hinton, West Virginia. Non-Responsive performed the evaluation on 05 December 2003. The point of contact at the readiness center was SGT Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary. Since there were no results above the recommended limit, the other samples were not submitted for analysis.

However, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly room and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. The inspection did not reveal any materials suspected of containing asbestos.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection did not reveal any water damage or visible mold.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interviews with employees and measurements for carbon dioxide and temperature revealed no indoor air quality concerns at the armory. However, measurements for humidity revealed that levels did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements. Note that the maintenance bay is only used on drill weekends for minor repair activities (oil changes, etc.); therefore, the hearing conservation, respiratory protection, and PPE programs are not applicable.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in all of the areas measured, including the maintenance bay (work bench), supply office, kitchen, officer's latrine, enlisted men's latrine, enlisted men's locker room, classrooms 1 and 2, CO office, main hallway, and AST office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The range was converted into a maintenance bay. The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at less than 2.7 micrograms lead per square foot ($\mu g/ft^2$);
- floor in the office area at 58 $\mu g/ft^2$;
- stored item (filing cabinet top surface) at 170 $\mu g/ft^2$;
- light fixture at 1600 $\mu g/ft^2$; and
- bullet trap at 530 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges*

to Other Uses document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, suspected asbestos-containing material, water damage, visible mold, housekeeping, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Hinton, West Virginia
Date of Sampling: 05 December 2003

Sample Number	Location	Results,µg/ft² [a]
WVHIN339-1	Assembly room – water cooler top surface (See Building Layout - Appendix B)	7.9
WVHIN339-2	Assembly room - garbage can top surface (See Building Layout – Appendix B)	4.5
WVHIN339-3	Assembly room - fan stand surface (See Building Layout – Appendix B)	18
WVHIN339-4	Assembly room – coat rack surface (See Building Layout Appendix B)	51
WVHIN339-5	Assembly room - garbage can top surface (See Building Layout – Appendix B)	4.3
WVHIN339-6	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Hinton, West Virginia
Date of Sampling: 05 December 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVHIN339-A1	Non-Responsive	0747-0925/98	2.4381	238.94	<0.004
WVHIN339-A2		0749-0925/96	2.473	237.41	<0.004
WVHIN339-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Hinton, West Virginia
Date of Sampling: 05 December 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor -- Kitchen	2	553	26.4	72.1
Outdoors	-	539	52.8	38.7

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Hinton, West Virginia

Date of Sampling: 05 December 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Maintenance Bay (work bench)	6.94-27.8	70	No
Supply Office	25.5-49.7	70	No
Kitchen	13.2-19.5	70	No
Officer's Latrine	8.49-25.1	40	No
Enlisted Men's Latrine	6.8-16.7	40	No
Enlisted Men's Locker Room	5.89-27.1	30	No
Classrooms 1 and 2	12.7-47.8	70	No
CO Office	32.8-50.1	70	No
Main Hallway	2.89-6.34	7.5	No
AST Office	31.2-48.5	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Hinton, West Virginia

Date of Sampling: 05 December 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVHIN339-7	Outside the range	< 2.7
WVHIN339-8	Floor	58
WVHIN339-9	Stored Item (desktop)	170
WVHIN339-10	Light Fixture	1600
WVHIN339-11	Bullet Trap	530
WVHIN339-12	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Hinton Armory West Virginia, ARNG	Hinton

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
05 December 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	KY	Non-Responsive : SFC

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 466 1861	BTry C, 1/201st FA	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	3	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
1	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDT XXXX	Video Display Terminal	3-low	D Uncontrolled Physical
7439-92-1	Lead Inorganic dusts & fumes, as Pb	2-moderate	C Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive		W	M	DAT AVAILABLE	MIL
		L			
		M			
		E		Non-Responsive	CIV
		E	M		MIL
		M			

SECTION 6. COMMENTS

Non-Responsive

___No comments See attached sheet

conducted survey. Building contain 3 full time military personnel and 1 cond civilian caretaker. On date of survey an additional 2 military personnel were on-site. Full time military employees perform mainly administrative functions.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

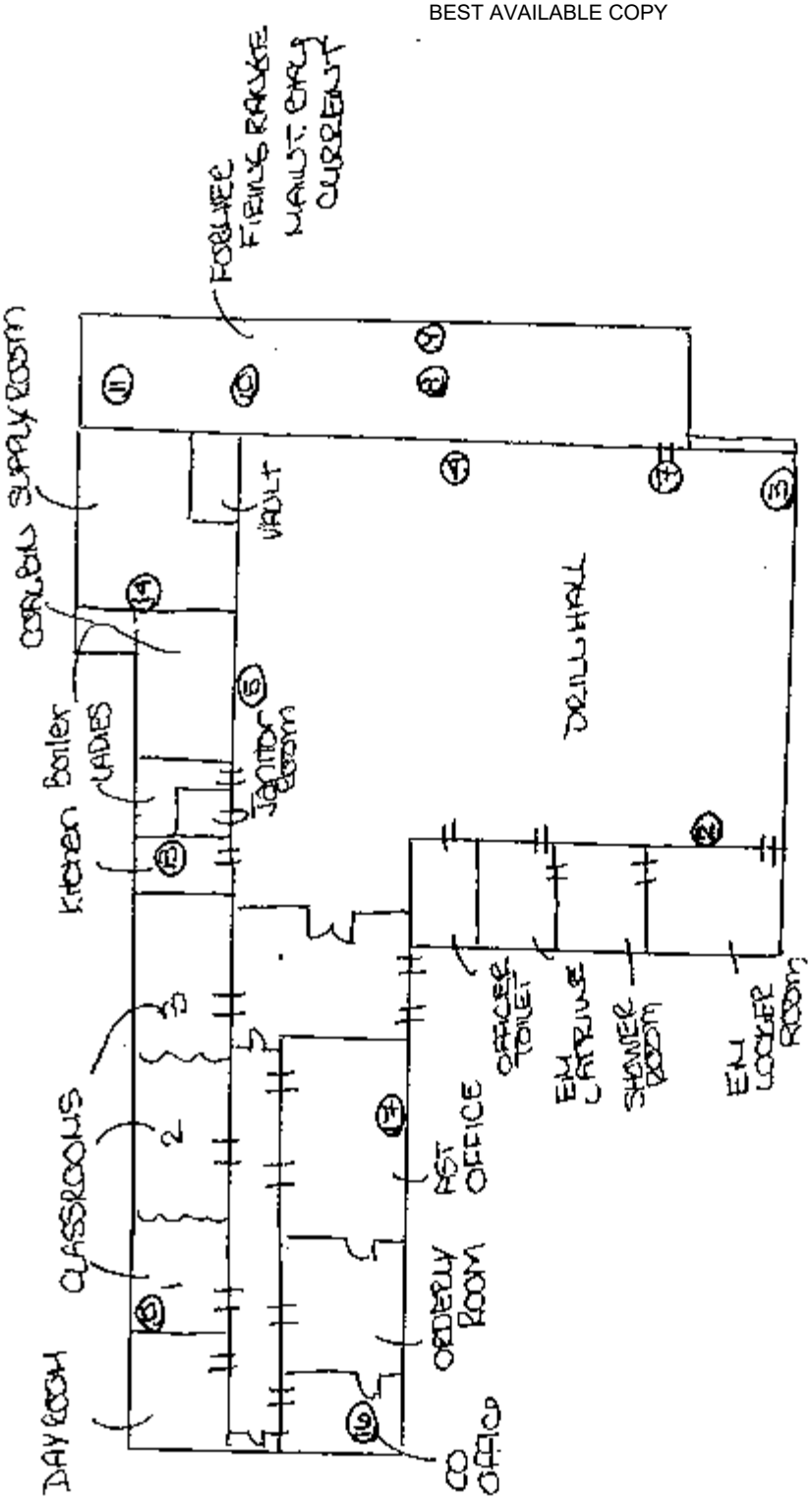
Btry C, 1/201st FA
Hinton, WV 25951
(304) 466-1861

HC77, Box166

Non-Responsive

[redacted]

Appendix B
Building Layout



Hinton WV Armory

Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVHIN339	**Chain Of Custody:**	121254
Address:	301-III Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Hinton, WV	**Date Analyzed:**	12/16/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	16-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413502	WVHIN339-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	7.9	ug/ft²	
0413503	WVHIN339-2	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.5	ug/ft²	
0413504	WVHIN339-3	Furnace	Wipe	****	0.111	2.70	ug/ft²	18	ug/ft²	
0413505	WVHIN339-4	Furnace	Wipe	****	0.111	6.75	ug/ft²	51	ug/ft²	
0413506	WVHIN339-5	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.3	ug/ft²	
0413507	WVHIN339-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413508	WVHIN339-7	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0413509	WVHIN339-8	Furnace	Wipe	****	0.111	13.50	ug/ft²	58	ug/ft²	
0413510	WVHIN339-9	Furnace	Wipe	****	0.111	67.51	ug/ft²	170	ug/ft²	
0413511	WVHIN339-10	Flame	Wipe	****	0.111	108.01	ug/ft²	1600	ug/ft²	
0413512	WVHIN339-11	Flame	Wipe	****	0.111	108.01	ug/ft²	530	ug/ft²	
0413513	WVHIN339-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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: Non-Responsive Technical Manager: Non-Responsive

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAPOR329-A1 through WVWIL335-A3
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-6027
DCL Sample ID No.:	03-35454 through 03-35502
Sample Receipt Date:	12/11/2003
Preparation Date:	12/15/03
Analysis Date:	12/15/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive

Non-Responsive

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VAPOR329-A1	03-35454	362.12	ND	<0.003
VAPOR329-A2	03-35455	355.29	ND	<0.003
VAPOR329-A3	03-35456	0	ND	-
VAVIR329-A1	03-35462	241.75	ND	<0.004
VAVIR329-A2	03-35463	239.35	ND	<0.004
VAVIR329-A3	03-35464	0	ND	-
WVWAL338-A1	03-35466	255.30	ND	<0.004
WVWAL338-A2	03-35467	246.10	ND	<0.004
WVWAL338-A3	03-35468	0	ND	-
WVBLU338-A1	03-35470	340.39	ND	<0.003
WVBLU338-A2	03-35471	326.60	ND	<0.003
WVBLU338-A3	03-35472	0	ND	-
VAGAT337-A1	03-35473	243.02	ND	<0.004
VAGAT337-A2	03-35474	254.11	ND	<0.004
VAGAT337-A3	03-35475	0	ND	-
VAHAM330-A1	03-35476	250.47	ND	<0.004
VAHAM330-A2	03-35477	255.99	ND	<0.004
VAHAM330-A3	03-35478	0	ND	-
VABIG336-A1	03-35479	343.24	ND	<0.003
VABIG336-A2	03-35480	307.31	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		96.	
% Recovery	LCS 2		98.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VABIG336-A3	03-35481	0	ND	-
WVHIN339-A1	03-35486	238.94	ND	<0.004
WVHIN339-A2	03-35487	237.41	ND	<0.004
WVHIN339-A3	03-35488	0	ND	-
WVMON335-A1	03-35489	283.66	ND	<0.004
WVMON335-A2	03-35490	288.02	ND	<0.003
WVMON335-A3	03-35491	0	ND	-
WVRIC339-A1	03-35495	299.70	ND	<0.003
WVRIC339-A2	03-35496	296.83	ND	<0.003
WVRIC339-A3	03-35497	0	ND	-
VACED337-A1	03-35498	243.02	ND	<0.004
VACED337-A2	03-35499	254.11	ND	<0.004
VACED337-A3	03-35500	0	ND	-
WVWIL335-A1	03-35501	247.64	ND	<0.004
WVWIL335-A2	03-35502	0	ND	-
WVWIL335-A3	03-35503	252.18	ND	<0.004
	Prep Blank		ND	
% Recovery	LCS 3		101.	
% Recovery	LCS 4		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory | Location: Hinton | Date: 12/5/2003

Sample 1

Sample Number: WVHIN339-A1

Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.445	2.429
	2.445	2.436
	2.448	2.43
	2.447	2.425
Average	2.446	2.430

Average Pre and Post: 2.4381

Time 1	7:47
Time 2	9:25
Total Time Sampled	1:38
Minutes Sampled	98.00

Volume: 238.94 Liters

Sample 2

Sample Number: WVHIN339-A2

Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.482	2.476
	2.486	2.459
	2.469	2.476
	2.464	2.472
Average	2.475	2.471

Average Pre and Post: 2.4730

Time 1	7:49
Time 2	9:25
Total Time Sampled	1:36
Minutes Sampled	96.00

Volume: 237.41 Liters

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Hinton
Date: 12/4/03

Sample 1
Sample Number: WVHIN339-A1
Pump: 648329

	Pre Flow Rate	Post Flow Rate
	2445	2429
	2445	2436
Average	2448	2430
	2447	2425
Average Pre and Post	2446	2430

Time 1 0747
Time 2 0925
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2
Sample Number: WVHIN339-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2482	2470
	2486	2459
Average	2469	2476
	2464	2472
Average Pre and Post	2475	2471

Time 1 0749
Time 2 0925
Total Time Sampled
Minutes Sampled

Volume **Liters**

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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Shaw™ Shaw Environmental, Inc.

National Guard Armory
Keyser Readiness Center – Keyser, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

National Guard Armory
Keyser Readiness Center – Keyser, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
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27 May 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Keyser Readiness Center in Keyser, West Virginia. Non-Responsive performed the evaluation on 27 October 2003. The point of contact at the readiness center was SSG Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs

- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall and gym of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor and gym should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, converted firing range, equipment room (gym), and maintenance office. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks (lobby) and condensation due to lack of proper ventilation (shower room). The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Measurements for temperature revealed that levels were below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific locations.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most areas; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter

color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. This area and stored items in this area must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Keyser Readiness Center in Keyser, West Virginia Non-Responsive performed the evaluation on 27 October 2003. The point of contact at the readiness center was SSG Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at two locations. One sample collected from the assembly hall (podium top surface) had a lead concentration of 360 $\mu g/ft^2$. The sample collected from the gym (heater unit flap top surface) had a lead concentration of 2300 $\mu g/ft^2$. It is recommended that these surfaces and the immediate areas around these surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, converted firing range, equipment room (gym), and maintenance office. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix B) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on one (1) full-time building occupant. In addition, a general sample was taken in the office of Craig A. Westfall. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory in the officer's latrine on an overhead pipe and in the enlisted men's latrine shower room on the ceiling. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that lead concentrations at all locations were below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles in the dayroom, classroom and training room (approximately square 2307 feet). The condition of the floor tiles was considered good since there were no damaged tiles. In

addition, suspected asbestos containing material in the form of pipe insulation was observed in the pipe joints and elbows throughout the facility and in the intricate piping system of the boiler room. The condition of the pipe insulation materials was considered good (no rips, tears, or other damage).

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection did not reveal any mold, however water damage was observed in the enlisted men's shower room on the ceiling and in the form of stained ceiling tiles in the lobby.

The source of the water damage in the lobby was likely from roof leaks, while the source in the shower room is likely from condensation due to lack of proper ventilation. Please note that a leak in the maintenance office has been fixed. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Measurements for temperature revealed that levels were below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific

locations. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the day room,

classroom, training room, middle front office, kitchen, maintenance office, and enlisted men's latrine.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The space was converted into a storage room. Note that the caretaker stated that the firing range was cleaned previously when the sand was removed. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 32 micrograms lead per square foot ($\mu g/ft^2$);
- floor in the office area at 200 $\mu g/ft^2$;
- stored item (storage box top surface) at 420 $\mu g/ft^2$;
- bullet trap wall at 14000 $\mu g/ft^2$; and
- bullet trap floor at 44000 $\mu g/ft^2$.

The lead levels at four of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas and stored items in these areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, ergonomic concerns, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Keyser, West Virginia
Date of Sampling: 27 October 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
VTKEY300-7	Assembly room - exit sign top surface (See Building Layout – Appendix B)	19
VTKEY300-8	Assembly room – podium top surface (See Building Layout Appendix B)	360
VTKEY300-9	Assembly room – table top (See Building Layout - Appendix B)	4.5
VTKEY300-10	Assembly room – alarm control box top surface (See Building Layout - Appendix B)	49
VTKEY300-11	Assembly room – table top (See Building Layout Appendix B)	5.4
VTKEY300-12	Field Blank	< 0.3 µg
VTKEY300-19	Kitchen microwave shelf	6.5
VTKEY300-20	Maintenance Office cabinet top surface	130
VTKEY300-21	Equipment Room (Gym) heart unit vent flap top surface	2300
VTKEY300-22	Day room – shelf top surface	6.8
VTKEY300-23	Classroom – desktop	5.4
VTKEY300-24	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 $\mu g/ft^2$.

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Keyser, West Virginia
Date of Sampling: 27 October 2003

Sample Number	Employee/ General Sample	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVKEY300-A1	Non-Responsive	1347-1603/136	2.4331	330.91	<0.003
WVKEY300-A2		1342-1603/141	2.4754	349.03	<0.003
WVKEY300-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Keyser, West Virginia
Date of Sampling: 27 October 2003

Sample Number	Location	Results, % By Weight
WVKEY300-PC1	Officer's Latrine overhead pipe	0.14
WVKEY300-PC2	Enlisted Men's Latrine shower room ceiling	0.18

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Keyser, West Virginia
Date of Sampling: 27 October 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor drill hall	2	538	54.9	66.2
Outdoors	-	496	51.1	63.4

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Keyser, West Virginia

Date of Sampling: 27 October 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Day Room (Office)	13.1-38.4	70	No
Classroom	8.9-48.3	70	No
Training Room	22.1-56.3	70	No
Middle Front Office	6.8-30.9	70	No
Office adjacent to lobby	22.1-73.6	70	Some areas
Kitchen	15.3-42.1	70	No
Maintenance Office	26.3-39.8	70	No
Gym (Equipment Room)	17.3-74.3	70	Some areas
Locker Room	17.3-62.9	30	Some areas
Officer's Latrine	17.7-54.6	40	Some areas
Enlisted Men's Latrine	14.3-38.6	40	No
Equipment (storage) Room	33.1-74.6	30	Yes

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Keyser, West Virginia

Date of Sampling: 27 October 2003

Sample Number	Location	Results, µg/ft^2 [a]
VTKEY300-13	Floor Outside of Range	32
VTKEY300-14	Floor	200
VTKEY300-15	Stored Item - shelf top	420
VTKEY300-16	Bullet Trap Wall	14000
VTKEY300-17	Bullet Trap Floor	44000
VTKEY300-18	Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Keyser Armory West Virginia	Keyser

OCATION/CODE	OPERATION/CODE
Administrative Areas/ AA	Administrative Operations/ ADO

URVEY DATE	EVALUATOR (Initials)
27 October 2003	Non-Responsive

IACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive : SSG

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 788 2523	Detachment 1, Battery B 1st Battalion, 201st Field Artillery	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1	3	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

IAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U
ACID		
COLD SURFACES		
HOT SURFACES		
NBC AGENTS		
OIL		
SOLVENTS		
SURGICAL GLOVES		

RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
AIRLINE				
ABRASIVE BLASTING HOOD				
DISPOSABLE				
FULL FACE AIR PURIFYING				
1/2 FACE AIR PURIFYING				
POWERED AIR PURIFYING				
1/4 FACE AIR PURIFYING				
SELF CONTAINED				

EYES/FACE	R	U
CHEMICAL SPLASH		
FULL FACE SHIELD		
CHEMICAL/SAFETY		
SAFETY/IMPACT		
WELDING HELMET		

HEARING	R	U
CANAL CAPS		
EAR PLUGS		
HELMETS		
MUFFS		
MUFF/EARPLUG COMBO		
MUFF/EARPLUG W/TIME LIMIT		

BODY	R	U
APRONS		
COLD WEATHER CLOTHING		
COVERALLS		
FULL BODY SUIT		
HEAT REFLECTIVE VEST/SUIT		
SAFETY BELT/HARNESS		

HEAD/FIT	R	U
COLD WEATHER BOOTS/HATS		
HARD HATS		
IMPERMEABLE BOOTS		
SAFETY/CONDUCTIVE SHOES		
SAFETY/NON-CONDUCTIVE SHOES		

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	Uncontrolled D Physical
7439-92-1	Lead, Inorganic Dusts & Fumes, as Pb	2-moderate	Uncontrolled C-Respiratory
1332-21-4	Asbestos (other)	2-moderate	Uncontrolled C-Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive		D	M	NOT AVAILABLE	MIL
		A	M	↓	↓
		G	↓	↓	↓
		D	↓	↓	CIV

SECTION 6. COMMENTS

Non-Responsive ___No comments See attached sheet

conducted Survey. Building contains 3 (three) Full time Employees and 1 (one) civilian (caretaker) employee. Employees mainly perform administrative functions.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

DEPARTMENT OF THE ARMY
DETACHMENT 1, BATTERY B
1ST BATTALION, 201ST FIELD ARTILLERY
400 KELLEY DRIVE
KEYSER, WEST VIRGINIA 26726-3616

27 October 2003

MEMORANDUM FOR Michele Seman, Shaw Enviromental

Subject: Full -Time Unit Staff

The following individuals are full-time employees at Detachment 1, Battery B, 1/201 Field Artillery located at 400 Kelley Drive, Keyser, WV 26726:

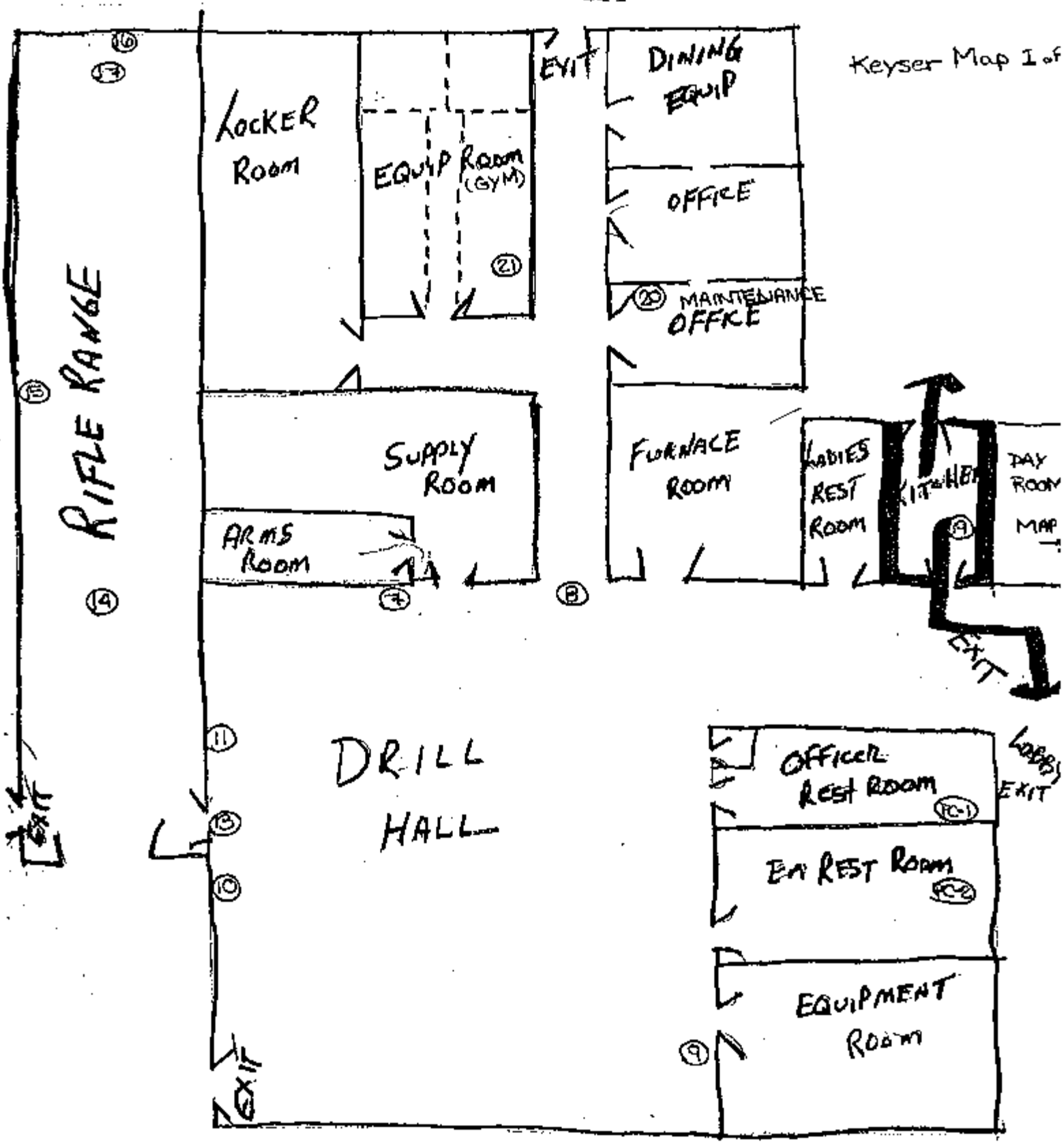
Non-Responsive

Non-Responsive

SSG, FA, WVARNG
Training NCO

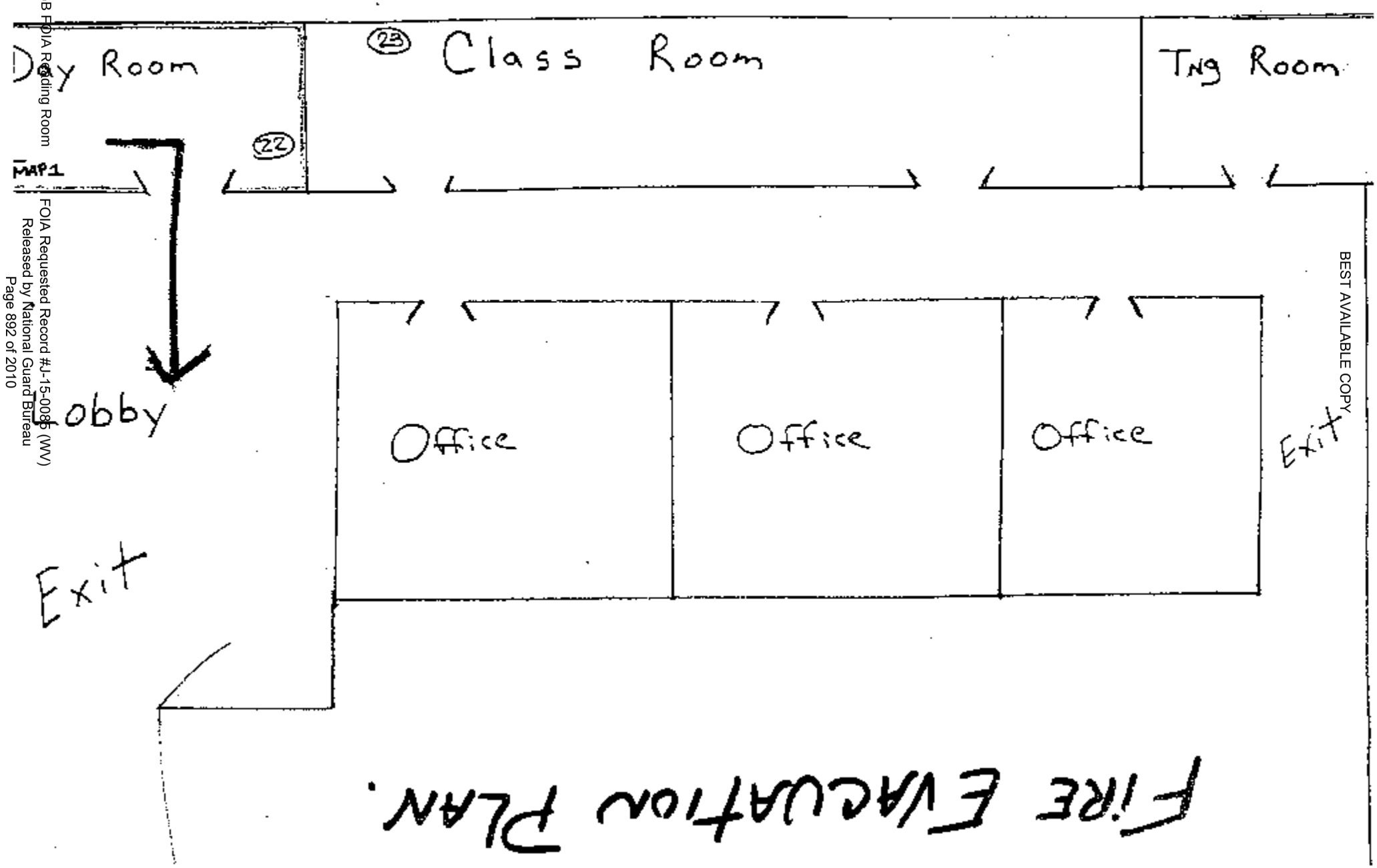
Appendix B
Building Layout

FIRE EVACUATION PLAN



Keyser Map 2 of 2

FIRE EVACUATION PLAN



FIRE EVACUATION PLAN.

Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Keyser	**Chain Of Custody:**	119254
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsi
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0408500	WVKEY300-7	Furnace	Wipe	****	0.111	5.40	ug/ft²	19	ug/ft²	
0408501	WVKEY300-8	Flame	Wipe	****	0.111	108.01	ug/ft²	360	ug/ft²	
0408502	WVKEY300-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.5	ug/ft²	
0408503	WVKEY300-10	Furnace	Wipe	****	0.111	13.50	ug/ft²	49	ug/ft²	
0408504	WVKEY300-11	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.4	ug/ft²	
0408505	WVKEY300-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408506	WVKEY300-13	Furnace	Wipe	****	0.111	6.75	ug/ft²	32	ug/ft²	
0408507	WVKEY300-14	Furnace	Wipe	****	0.111	67.51	ug/ft²	200	ug/ft²	
0408508	WVKEY300-15	Furnace	Wipe	****	0.111	67.51	ug/ft²	420	ug/ft²	
0408509	WVKEY300-16	Furnace	Wipe	****	0.111	3375.34	ug/ft²	14000	ug/ft²	
0408510	WVKEY300-17	Furnace	Wipe	****	0.111	13501.35	ug/ft²	44000	ug/ft²	
0408511	WVKEY300-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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

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:**	WVKEY300	**Chain Of Custody:**	121264
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Keyser	**Date Analyzed:**	12/22/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	22-Dec-03

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413589	WVKEY300-19	Furnace	Wipe	****	0.111	2.70	ug/ft²	6.5	ug/ft²	
0413590	WVKEY300-20	Furnace	Wipe	****	0.111	67.51	ug/ft²	130	ug/ft²	
0413591	WVKEY300-21	Flame	Wipe	****	0.111	108.01	ug/ft²	2300	ug/ft²	
0413592	WVKEY300-22	Furnace	Wipe	****	0.111	2.70	ug/ft²	6.8	ug/ft²	
0413593	WVKEY300-23	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.4	ug/ft²	
0413594	WVKEY300-24	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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.

Analy: Non-Responsive

Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Keyser
Date: 10/27/2003

Sample 1

Sample Number: WVKEY300-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.441	2.425
	2.454	2.423
	2.443	2.419
	2.445	2.415
Average	**2.446**	**2.421**

Average Pre and Post	**2.4331**
Time 1	13:47
Time 2	16:03
Total Time Sampled	**2:16**
Minutes Sampled	136.00
Volume	**330.91 Liters**

Sample 2

Sample Number: WVKEY300-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.492	2.468
	2.486	2.468
	2.478	2.47
	2.478	2.463
Average	**2.484**	**2.467**

Average Pre and Post	**2.4754**
Time 1	13:42
Time 2	16:03
Total Time Sampled	**2:21**
Minutes Sampled	141.00
Volume	**349.03 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Keyser, WV
Date: 10/27/08

Sample 1
Sample Number: WVKEY308-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2441	2425
	2454	23
	2448	19
	2445	15
Average		
	2446	2421
Average Pre and Post		

Time 1 1340
Time 2 1603
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2
Sample Number: WVKEY308-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2492	2468
	2486	2468
	2478	2470
	2478	2463
Average		
	2484	2467
Average Pre and Post		

Time 1 1342
Time 2 1603
Total Time Sampled
Minutes Sampled

Volume **Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVKIN312-PC1 hrough WVHUN309-PC1
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33113 through 03-33136
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/2003
Analysis Date:	11/13/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVKIN312-PC1	03-33113	170.	0.017
WVCLA302-PC1	03-33114	ND	ND
VWBUC301-PC1	03-33115	33.	0.0033
VWBUC301-PC2	03-33116	76.	0.0076
VWBUC301-PC3	03-33117	ND	ND
WVGAS310-PC1	03-33119	64.	0.0064
WVELK301-PC1	03-33120	68.	0.0068
WVELK301-PC2	03-33121	1700.	0.17
WVKEY300-PC1	03-33124	1400.	0.14
VWKEY300-PC2	03-33125	1800.	0.18
WVWES708-PC1	03-33129	110.	0.011
WVWES708-PC2	03-33130	71000.	7.1
WVFAI303-PC1	03-33131	54.	0.0054
WVSAI303-PC1	03-33133	900.	0.090
WVSAI303-PC2	03-33134	250.	0.025
WVSAI303-PC3	03-33135	1200.	0.12
WVHUN309-PC1	03-33136	ND	ND
	Prep Blank	ND	
% Recovery	LCS	82.	
% Recovery	32912MS	87.	
% Recovery	32912MSD	89.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Keyser Readiness Center
400 Kelley Drive
Keyser, West Virginia 26726

AECOM
December 2012
Document No.: 60275401.1/Keyser Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Martinsburg Readiness Center
400 Kelley Drive
Keyser, West Virginia

Non-Responsive
Industrial Hygienist

Non-Responsive
Project Manager

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Keyser Readiness Center

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Executive Summary

On October 15, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Keyser Readiness Center facility located at 400 Kelley Drive in Keyser, West Virginia. Non-IR, SSG was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Keyser Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Keyser Readiness Center is currently staffed by three personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and a Drill/Assembly Hall.

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

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

The Keyser Readiness Center is housed in a one-story masonry building, configured in an L-shape, and consists of approximately 40% administrative space and 60% Assembly Hall.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust inside the former fire range indicated lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Keyser Readiness Center during this survey.

No visible damaged suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed.

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

1.0 Facility Description and Operations

The Keyser Readiness Center, constructed in 1962, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The smaller one-story section of the building contains offices and administrative areas, and is finished with plaster walls, lay-in ceiling tiles and floor tile. The adjoining two-story Assembly/Drill Hall comprises the larger portion of the building. This area is finished with painted block walls and a concrete floor. According to site personnel there is a firing range at the facility, but it has not been used since mid-1980. The former fire range, which is currently used as a service bay, and has no bullet trap and according to on-site personnel was properly converted for this use.

The primary activity at the Keyser Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is occasionally rented out for limited civic activities such as group meetings, trade shows and to other related local groups and organizations. The Keyser Readiness Center is currently staffed by three personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

Wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of Housing and Urban development (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the Fire Range -bullet trap area, Fire Range - shelf, Fire Range - floor, and Fire Range - light fixture indicated levels of lead in excess of 200 ug/ft^2.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 01	Assembly Hall - table	<110 ug/ft^2
Pb – 02	Kitchen - counter	<110 ug/ft^2
Pb – 03	CO Office - desk top	<110 ug/ft^2
Pb – 04	CO Office- top of shelf	<110 ug/ft^2
Pb – 05	Administrative Corridor - floor	<110 ug/ft^2
Pb – 06	Fire Range - bullet trap area	180,000 ug/ft^2
Pb – 07	Fire Range - shelf	580 ug/ft^2
Pb – 08	Fire Range - floor	5,100 ug/ft^2
Pb – 09	Assembly Hall - floor	<110ug/ft^2
Pb-010	Fire Range - light fixture	360 ug/ft^2

ug/ft^2 = Micrograms per square foot.

The wipe samples collected inside the former fire range detected levels of lead in excess of the ARNG action level of 200 micrograms per square foot (ug/ft^2). Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. The paint on the walls appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Keyser Readiness Center during this survey. Thermal system piping observed throughout the facility is typically covered in suspect ACM or fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion during this survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Keyser Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Keyser Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Administrative Corridor	0.6	345	76.2	54.6
Training Room	0.5	303	76.3	52.0
Classroom	0.5	285	76.7	48.3
CO Office	0.6	398	76.4	52.1
Foyer	0.5	334	77.3	51.8
Conference Room	0.4	326	77.6	48.8

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Kitchen	0.4	277	77.1	48.0
Women's Room	0.5	319	77.9	49.8
State Maintenance Office	0.6	264	76.9	47.2
Men's Restroom	0.5	291	75.8	47.1
Assembly Hall	0.2	266	75.4	50.4
Boiler Room	0.2	296	76.6	50.9
Locker Corridor	0.6	249	76.7	50.3
Sleeping Quarters Room	0.2	253	75.2	51.5
Day Room	0.1	244	73.7	52.1
Physical Fitness Room	0.1	322	73.3	52.8
Locker Room	0.1	256	73.1	52.3
Former Fire Range (currently used as service bay)	0.1	243	71.6	54.0

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Keyser Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Keyser Readiness Center is heated by a natural gas boiler that feeds a radiant heating system. There is no HVAC system that provides fresh air from the building exterior into administrative areas.

4.1.2 HVAC Maintenance

There was no mechanical ventilation system.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were generally adequate with the exception of the Boiler Room and Physical Fitness Room.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Administrative Corridor	84.5	Y	5
Training Room	58.7	Y	30
Classroom	61.7	Y	30
CO Office	109.2	Y	50
Foyer	61.8	Y	5
Conference Room	114.5	Y	50
Kitchen	107.6	Y	50
Women's Room	37.4	Y	5
Maintenance Supply Room	33.4	Y	10
Men's Restroom	42.5	Y	5
Assembly Hall	82.4	Y	10
Boiler Room	29.2	N	30
Locker Corridor	38.2	Y	5
Sleeping Quarters Room	100.4	Y	30
Day Room	97.6	Y	10
Physical Fitness Room	9.7	N	30
Locker Room	23.5	Y	7
Former Fire Range (currently used as service bay)	41.7	Y	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Keyser Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Keyser Readiness Center.

AECOM did not observe any damaged, suspect asbestos-containing materials at the Keyser Readiness Center.

AECOM did not observe peeling paint at the Keyser Readiness Center.

AECOM did not observe evidence of water intrusion at the Keyser Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005 with the exception of the Boiler Room and Physical Fitness Room.

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

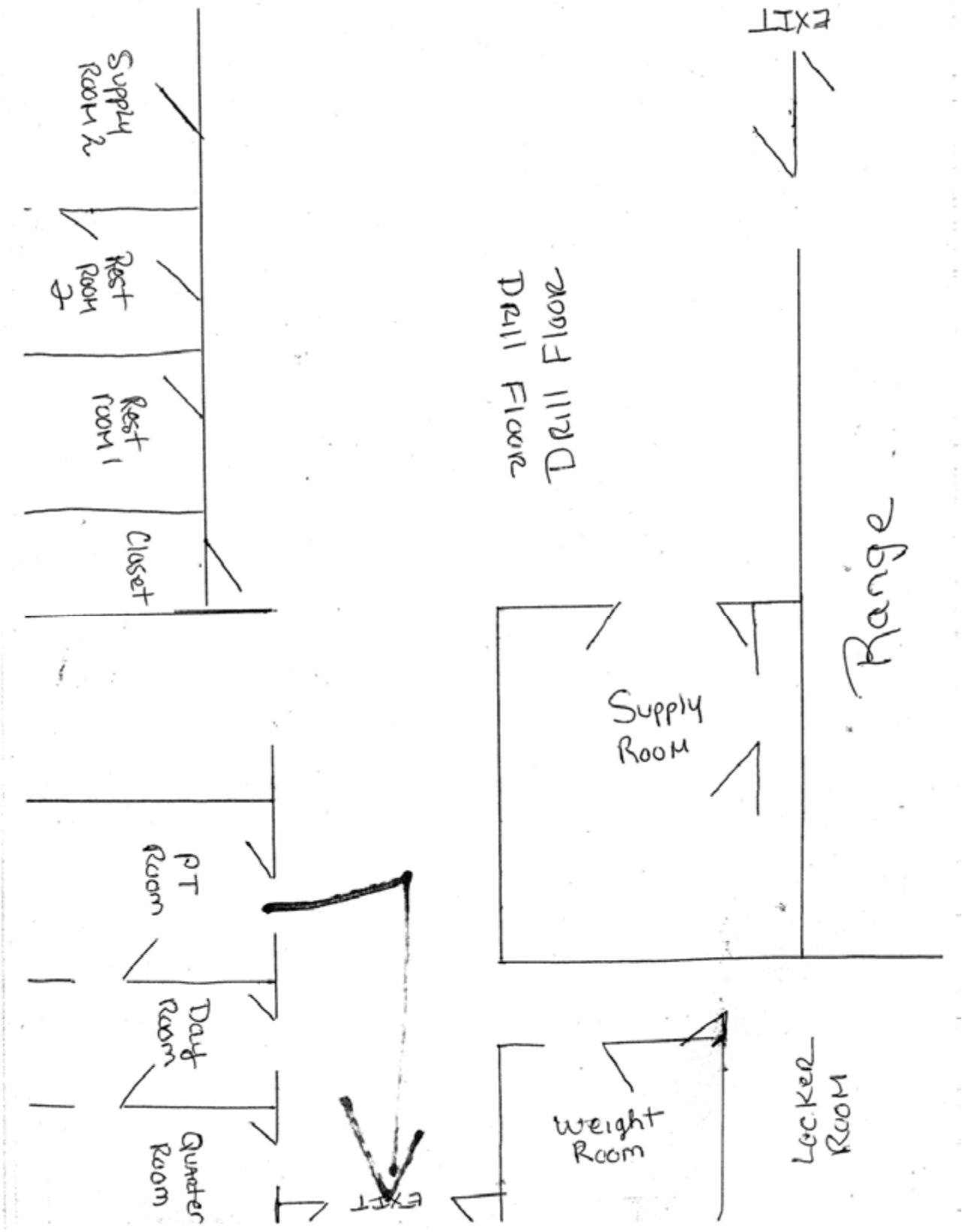
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

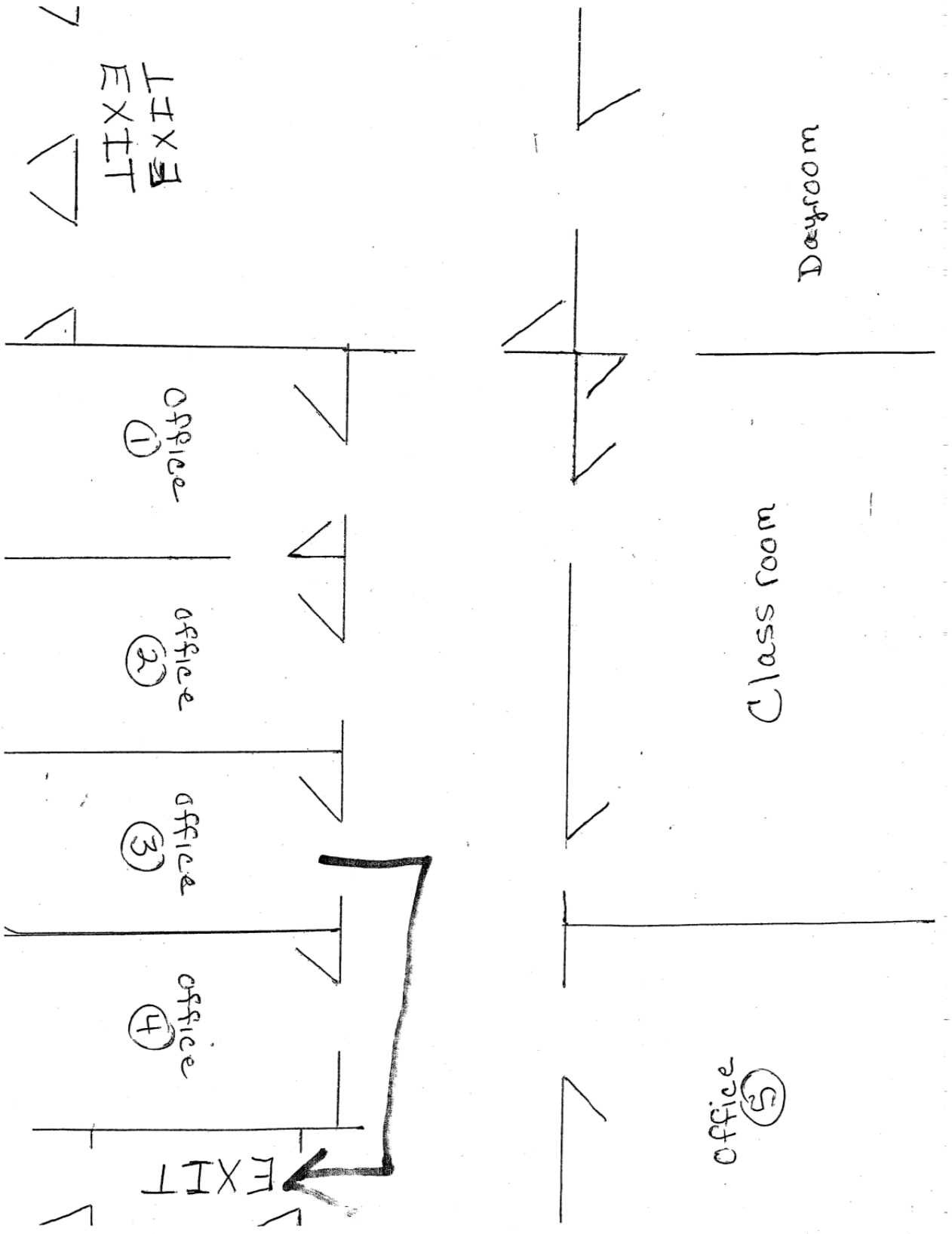
Appendix A

Keyser Readiness Center Facility Layout

AECOM



AECOM



Appendix B

Keyser Readiness Center Photographs

AECOM

Photograph 1

View of Building Exterior - Front

Photograph 2

View of Building Exterior - Rear

AECOM

Photograph 3

View of Administrative Corridor

Photograph 4

View of Classroom

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Photograph 5

View of Office Area

Photograph 6

View of Kitchen

AECOM

Photograph 7

View of Assembly Hall

Photograph 8

View of Bunk Room

AECOM

Photograph 9

View of Physical Fitness Room

Photograph 10

View of Former Gun Range

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Photograph 11

View of Former Bullet Trap

Photograph 12

Parts Wash Bin

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Photograph 13

Assembly Hall Radiant Heat System

Appendix C

Analytical Results

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	**Job Name:**	Keyser/Kelley RC	**Chain Of Custody:**	514246		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Keyser, WV	**Date Submitted:**	10/23/2012		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	AECOM		
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	10/26/2012	**Report Date:**	10/26/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments
13007937	Pb-001	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007938	Pb-002	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007939	Pb-003	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007940	Pb-004	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007941	Pb-005	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007942	Pb-006	Flame	Wipe	****	0.111	110 ug/ft²	19000	180000 ug/ft²	
13007943	Pb-007	Flame	Wipe	****	0.111	110 ug/ft²	64	580 ug/ft²	
13007944	Pb-008	Flame	Wipe	****	0.111	110 ug/ft²	560	5100 ug/ft²	
13007945	Pb-009	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13007946	Pb-010	Flame	Wipe	****	0.111	110 ug/ft²	40	360 ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Keyser/Kelley RC	Chain Of Custody:	514246		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Keyser, WV	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/26/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

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

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Analy Non-Responsive

Technical Manager Non-Responsive

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514246

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

Submittal Information:
1. Job Name: Keyser / Kelley RC
2. Job Location: Keyser, WV
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone #
5. Submitted by: AECOM (Signature) Non-Responsi

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled): ☐ Immediate Date Due: ☐ 24 Hours Time Due: Comments:

NORMAL BUSINESS HOURS: ☐ Immediate ☐ 3 Day ☐ Next Day ☒ 5 Day ☐ 2 Day Date Due: 12/12 ☐ Results Required By Noon

REPORT TO: ☐ Include EQUIS/Field Data Sheets in Report ☒ Email: Non-Responsive ☐ Fax: ☐ Verbal:

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quant) PLM/TEM (Qual) PLM/TEM (Quant) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that bluk samples be submitted with all air and surface samples

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

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

Metals Analysis
☐ Pb Paint Chip (QTY)
☒ *Pb Dust Wipe (wipe type: Ghetty) 10 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
	SEE ATTACHED FIELD DATA SHEETS														

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

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/15/12
Job Number: 60275401
Contact Pers: Non-Responsive

Job Name: Keyser/Kelley RC
Job Location: RC Keyser/Kelley RC
Address: 400 Kelley Dr.
Keyser, WV

Company: AECOM
Page__ of__
Phone Number: 315 432 0506
Collected B: Non-Responsiv
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Dusty Surface	16 in^2	ghost wipe
Pb-002	Kitchen	Dusty Surface		
Pb-003	Sgt Holmes Office	Desk		
Pb-004	" " "	File Cabinet		
Pb-005	Corridor	Floor		
Pb-006	Former Range	Bullet Trap		
Pb-007	" "	Stored Item ~~Light Fixture~~ (2)		
Pb-008	" "	Floor ~~Stored Items~~ (2)		
Pb-009	Outside Range	Floor		
Pb-010	Former Range	Light Fixture	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

AECOM

References

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

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NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 15 July 2004

MEMORANDUM FOR WVARNG, Martinsburg Readiness Center, Martinsville, WV 25401-9469

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive [redacted]

Encl

Regional Industrial Hygienist

CF: OHM Non-Responsive [redacted]

National Guard Armory
Col. Morgan Morgan Readiness Center
Martinsburg, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall (display case top surface) and kitchen (paper towel dispenser top surface) at the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the drill/assembly area and kitchen should be thoroughly cleaned. Housekeeping should be improved to insure that lead levels are kept as low as possible in these areas. **RAC - 4**
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, kitchen, locker room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Materials (pipe insulation) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials. **RAC - 5**
- Measurements for humidity revealed that levels did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in some of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**

- Wipe sampling for lead in the converted firing range revealed concentrations well above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap, light fixtures, exhaust ventilation system, and other highly contaminated items due to the high lead levels. The exhaust ventilation system, if functional, should not be used. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible. **RAC - 3**

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Col. Morgan Morgan Readiness Center – Martinsburg, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

13 March 2004

National Guard Armory
Col. Morgan Morgan Readiness Center – Martinsburg, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

13 March 2004

Prepared by: Non-Responsive [redacted]
Industrial Hygienist

Reviewed by: Non-Responsive [redacted]
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Col. Morgan Morgan Readiness Center in Martinsburg, West Virginia. Non-Responsive performed the evaluation on 03 February 2004. The point of contact at the readiness center was caretaker Non-Responsive No personnel from the military unit were available due to weather conditions on the date of the survey.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Water Damage
- Presence of Mold
- Housekeeping
- Safety and Industrial Hygiene Programs

- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall (display case top surface) and kitchen (paper towel dispenser top surface) at the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the drill/assembly area and kitchen should be thoroughly cleaned. Housekeeping should be improved to insure that lead levels are kept as low as possible in these areas.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, kitchen, locker room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (pipe insulation) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Measurements for humidity revealed that levels did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in some of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations well above the recommended level. These areas must be decontaminated by a thorough

cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap, light fixtures, exhaust ventilation system, and other highly contaminated items due to the high lead levels. The exhaust ventilation system, if functional, should not be used. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

Interviews with employees were not conducted. No personnel from the military unit were available due to weather conditions on the date of the survey. This primarily affected the ergonomic assessment.

1.0 Introduction

Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Col. Morgan Morgan Readiness Center in Martinsburg, West Virginia. [redacted] performed the evaluation on 03 February 2004. The point of contact at the readiness center was caretaker [redacted] No personnel from the military unit were available due to weather conditions on the date of the survey.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any results above the recommended level from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at two locations. One sample collected from the drill/assembly hall (display case top surface) had lead concentration of 260 $\mu g/ft^2$. The sample collected from the top surface of the paper towel dispenser located in the kitchen had a lead concentration of 240 $\mu g/ft^2$. It is recommended that these surfaces and the immediate areas around these surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-15 (*Guidelines and Procedures for Indoor Firing Range (IFR) Rehabilitation, Conversion, and Cleaning*). In addition, any other dusty/dirty areas in the drill/assembly hall and kitchen should be thoroughly cleaned. Housekeeping should be improved to insure that lead levels are kept as low as possible in these areas.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, kitchen, locker room, and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (Administrative Office #104 and Recruiting Office #105). Due to the weather conditions, no employees or military personnel were present for breathing zone employee exposure sampling. The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing material was pipe insulation observed in the boiler room on ductwork (approximately 16 linear feet) and pipe joints or elbows (approximately thirty-four joints/elbows). Suspected asbestos containing pipe insulation was observed on approximately 188 pipe joints/elbows throughout the building, including the drill hall (50), men's latrine (6), men's shower room (20), locker room (15), comm. room (21), lobby/hallway between the kitchen and drill hall (15), kitchen (12), main lobby (21), orderly room #103 (2), recruiting office #105(2),

room adjacent to recruiting office (1), training room (2), main hallway (12), administrative office (3), and classroom (6). It is assumed that suspected asbestos-containing insulation is in the pipe joints/elbows throughout the facility. The condition of the pipe insulation materials was considered good (no rips, tears, or other damage).

An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection did not reveal any water damage or visible mold.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees were not conducted. No personnel from the military unit were available due to weather conditions on the date of the survey.

2.3.2 Indoor Air Quality

An interview with the caretaker and measurements for carbon dioxide and temperature revealed no indoor air quality concerns at the armory. However, measurements for humidity revealed that levels did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% in the facility. It is recommended that a humidification system be installed at the facility.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in some areas measured, including the men's shower room, men's latrine, and orderly room.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The range was converted into a storage room/maintenance bay. The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 2100 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 1300 $\mu g/ft^2$;
- stored item (desktop) at 2300 $\mu g/ft^2$;
- overhead heater at 410000 $\mu g/ft^2$;
- light fixture at 79000 $\mu g/ft^2$;
- exhaust ventilation system at 3000000 $\mu g/ft^2$; and
- bullet trap at 30000 $\mu g/ft^2$.

The lead levels at all of these locations were well above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-15 (*Guidelines and Procedures for Indoor Firing Range (IFR) Rehabilitation, Conversion, and Cleaning*). It may be appropriate to remove the bullet trap, light fixtures, exhaust ventilation system, and other highly contaminated items due to the high lead levels. The exhaust ventilation system, if functional, should not be used. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, water damage, visible mold, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, indoor air quality, lighting and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

Interviews with employees were not conducted. No personnel from the military unit were available due to weather conditions on the date of the survey. This primarily affected the ergonomic assessment.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Martinsburg, West Virginia
Date of Sampling: 03 February 2004

Sample Number	Location	Results, µg/ft² [a]
WVMAR034-1	Assembly room – display case top surface (See Building Layout – Appendix B)	260
WVMAR034-2	Assembly room – vending machine top surface (See Building Layout – Appendix B)	58
WVMAR034-3	Assembly room – table top (See Building Layout Appendix B)	18
WVMAR034-4	Assembly room – table top (See Building Layout – Appendix B)	130
WVMAR034-5	Assembly room – table top (See Building Layout – Appendix B)	84
WVMAR034-6	Field Blank	1.3 µg
WVMAR034-14	Locker Room – heater unit flap top surface	160
WVMAR034-15	Kitchen – paper towel dispenser top surface	240
WVMAR034-16	Lobby – heater unit top surface	20
WVMAR034-17	Training/Administrative Room #104 – desk shelf top surface	4.4
WVMAR034-18	Field Blank	0.62 µg
WVMAR034-19	Orderly Room #103 – window sill	35
WVMAR034-20	Classroom #102 – shelf surface	14

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Martinsburg, West Virginia
Date of Sampling: 03 February 2004

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVMAR034-A1	Administrative Office	1257-1503/126	2.5035	315.44	<0.003
WVMAR034-A2	Recruiting Office	1257-1503/126	2.4683	311.00	<0.003
WVMAR034-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Martinsburg, West Virginia
Date of Sampling: 03 February 2004

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Kitchen	1	582	23.4	68.7
Outdoors	-	546	52.0	41.5

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Martinsburg, West Virginia

Date of Sampling: 03 February 2004

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Men's Latrine	28.2-46.1	40	Some Areas
Men's Shower	4.12-5.86	20	No
Orderly Room	66.2-95.3	70	Some Areas
Classroom	88.3-114.6	70	Yes
Hallway	15.7-66.3	7.5	Yes

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Martinsburg, West Virginia

Date of Sampling: 03 February 2004

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVMAR034-7	Outside the range	2100
WVMAR034-8	Floor	1300
WVMAR034-9	Stored Item (desktop)	2300
WVMAR034-10	Overhead Heater	410000
WVMAR034-11	Light Fixture	79000
WVMAR034-12	Field Blank	16 µg
WVMAR034-13	Exhaust Ventilation System	3000000
WVMAR034-21	Bullet Trap	30000

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Morgan Morgan Armory (West Virginia ARNG	Martinsburg

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
03 February 2004	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SFC

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
	157th Military Police Co	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1	4	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
1	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTYXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
1332-21-4	Asbestos (other)	2-moderate	C Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	Not Available	MIL
		W			
		M			
			F		d
		S	M		CIV

SECTION 6. COMMENTS

No comments See attached sheet

Survey conducted by Non-Responsive building contains 4 (four) full time military staff and 1 civilian contractor staff performing only administrative functions

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

COL. MORGAN MORGAN ARMORY
157TH MILITARY POLICE COMPANY(GUARD)
WEST VIRGINIA ARMY NATIONAL GUARD
2096 KELLY ISLAND ROAD
MARTINSBURG, WEST VIRGINIA 25401

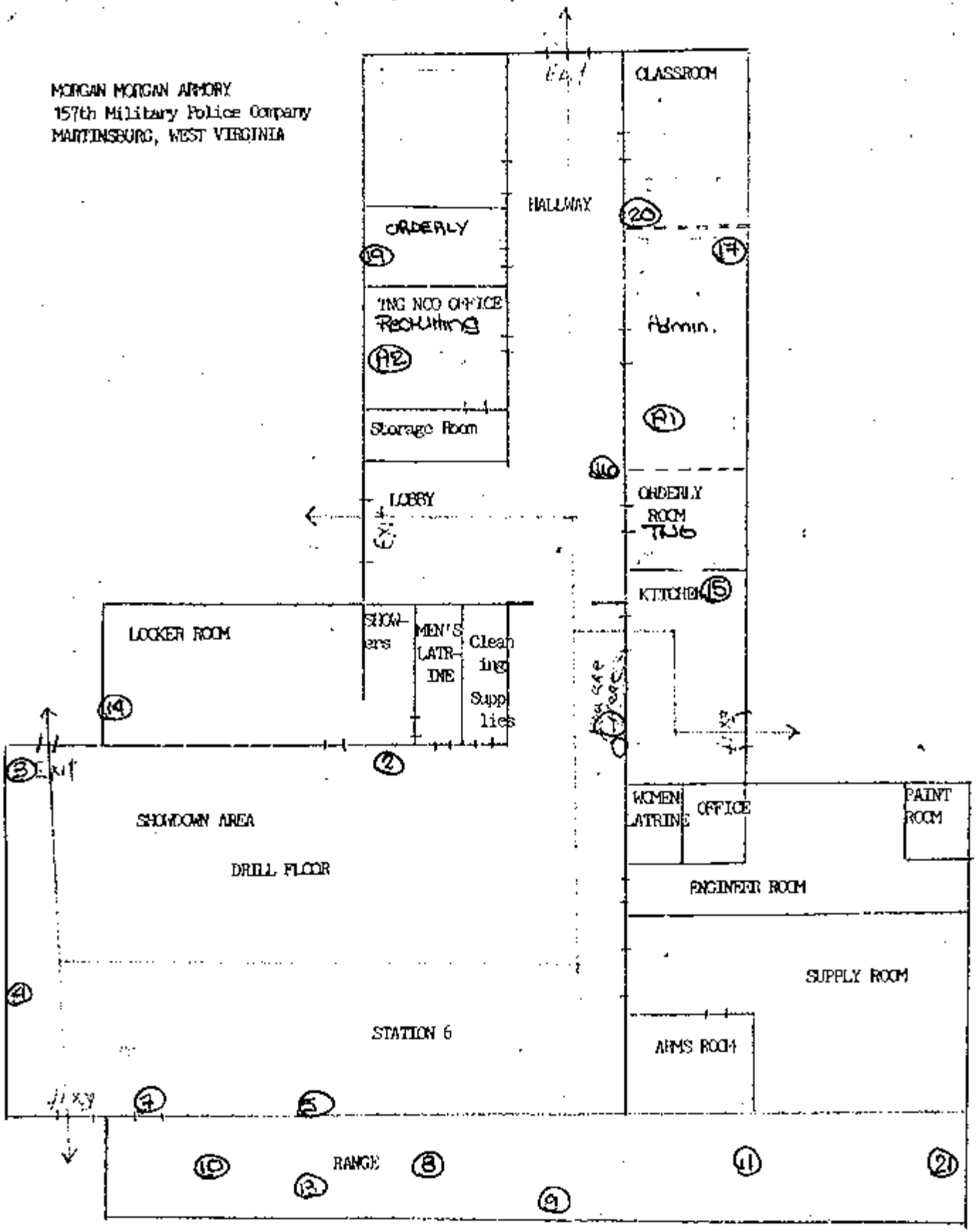
WXF6AA/WXF6HD 03FEB04

Non-Responsive

[redacted]

Appendix B
Building Layout

MORGAN MORGAN ARMORY
157th Military Police Company
MARTINSBURG, WEST VIRGINIA



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVMAR034	**Chain Of Custody:**	122729
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Marinsburg, WV	**Date Analyzed:**	03/01/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Response
		P.O. Number:	1103	**Report Date:**	04-Mar-04
Attention:	Non-Response				

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
0424131	WVMAR034 1	Furnace	Wipe	****	0.111	67.51	ug/ft^2	260	ug/ft^2	
0424132	WVMAR034 2	Furnace	Wipe	****	0.111	13.50	ug/ft^2	58	ug/ft^2	
0424133	WVMAR034 3	Furnace	Wipe	****	0.111	2.70	ug/ft^2	18	ug/ft^2	
0424134	WVMAR034 4	Furnace	Wipe	****	0.111	33.75	ug/ft^2	130	ug/ft^2	
0424135	WVMAR034 5	Furnace	Wipe	****	0.111	13.50	ug/ft^2	84	ug/ft^2	
0424136	WVMAR034 6	Furnace	Wipe Blank	****	N/A	0.30	ug	1.3	ug	
0424137	WVMAR034 7	Flame	Wipe	****	0.111	108.01	ug/ft^2	2100	ug/ft^2	
0424138	WVMAR034 8	Flame	Wipe	****	0.111	108.01	ug/ft^2	1300	ug/ft^2	
0424139	WVMAR034 9	Flame	Wipe	****	0.111	108.01	ug/ft^2	2300	ug/ft^2	
0424140	WVMAR034 10	Flame	Wipe	****	0.111	108.01	ug/ft^2	410000	ug/ft^2	
0424141	WVMAR034 11	Flame	Wipe	****	0.111	108.01	ug/ft^2	79000	ug/ft^2	
0424142	WVMAR034 12	Furnace	Wipe	****	0.111	13.50	ug/ft^2	16	ug/ft^2	
0424143	WVMAR034 13	Flame	Wipe	****	0.111	108.01	ug/ft^2	3000000	ug/ft^2	
0424144	WVMAR034 21	Flame	Wipe	****	0.111	108.01	ug/ft^2	30000	ug/ft^2	

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.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVMAR034	**Chain Of Custody:**	122729
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Martinsburg, WV	**Date Analyzed:**	03/01/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	04-Mar-04
Attention:	Ken Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Final Result	Comments

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

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

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

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

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

Analyst: [redacted] Non-Responsive

Technical Manager: Non-Responsive

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AMA Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Martinsburg, WV	**Chain Of Custody:**	123729
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	3/9/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	09-Mar-04

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result		Comments
0429327	WVMAR034-14	Furnace	Wipe	****	0.111	67.51	ug/ft^2	160	ug/ft^2	
0429328	WVMAR034-15	Furnace	Wipe	****	0.111	67.51	ug/ft^2	240	ug/ft^2	
0429329	WVMAR034-16	Furnace	Wipe	****	0.111	13.50	ug/ft^2	20	ug/ft^2	
0429330	WVMAR034-17	Furnace	Wipe	****	0.111	2.70	ug/ft^2	4.4	ug/ft^2	
0429331	WVMAR034-18	Furnace	Wipe Blank	****	N/A	0.30	ug	0.62	ug	
0429332	WVMAR034-19	Furnace	Wipe	****	0.111	33.75	ug/ft^2	35	ug/ft^2	
0429333	WVMAR034-20	Furnace	Wipe	****	0.111	2.70	ug/ft^2	14	ug/ft^2	

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: Non-Responsive

Technical Manager: Non-Responsive

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DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field One St. Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAWIN034-A1 through WVMAR034-A3
P.O. No.:	1103
Sample Location:	Winchester VA / Martinsburg WV
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	04-S-0541
DCL Sample ID No.:	04-02963 through 04-02972
Sample Receipt Date:	2/5/2004
Preparation Date:	02/06/04
Analysis Date:	02/06/04

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VAWIN034-A1	04-02963	315.64	ND	<0.003
VAWIN034-A2	04-02964	301.26	ND	<0.003
VAWIN034-A3	04-02965	0	ND	-
WVMAR034-A1	04-02970	315.44	ND	<0.003
WVMAR034-A2	04-02971	311.00	ND	<0.003
WVMAR034-A3	04-02972	0	ND	-
	Prep Blank		ND	
% Recovery	LCS		103.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Martinsburg
Date: 02/03/2004

Sample 1

Sample Number: WVMAR034-A1

Pump:	647615	
	Pre Flow Rate	**Post Flow Rate**
	2.468	2.522
	2.516	2.497
	2.507	2.516
	2.507	2.495
Average	**2.500**	**2.508**

Average Pre and Post	**2.5035**
Time 1	12:57
Time 2	15:03
Total Time Sampled	**2:06**
Minutes Sampled	126.00
Volume	**315.44 Liters**

Sample 2

Sample Number: WVMAR034-A2

Pump:	648339	
	Pre Flow Rate	**Post Flow Rate**
	2.444	2.453
	2.472	2.464
	2.474	2.471
	2.480	2.488
Average	**2.468**	**2.469**

Average Pre and Post	**2.4683**
Time 1	12:57
Time 2	15:03
Total Time Sampled	**2:06**
Minutes Sampled	126.00
Volume	**311.00 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory Location: MARTINSburg
Date: 02/03/04

Sample 1
Sample Number: WVMAR034-A1
Pump: 047615

	Pre Flow Rate	Post Flow Rate
	2468	2522
	2516	2497
Average	2507	2516
	2507	2495
Average Pre and Post	2500	2508

Time 1 1257
Time 2 1503
Total Time Sampled
Minutes Sampled

Volume Liters

Sample 2
Sample Number: WVMAR034-A2
Pump:

	Pre Flow Rate	Post Flow Rate
	2444	2453
	2472	2464
Average	2474	2471
	2480	2488
Average Pre and Post	2468	2469

Time 1 1257
Time 2 1503
Total Time Sampled
Minutes Sampled

Volume Liters

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Martinsburg Readiness Center
2096 Kelly Island Road
Martinsburg, West Virginia 25405

AECOM
December 2012
Document No.: 60275401.1/Martinsburg Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Martinsburg Readiness Center
2096 Kelly Island Road
Martinsburg, West Virginia

Non-Responsive

Non-Responsive

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Martinsburg Readiness Center

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Executive Summary

On October 15, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Martinsburg Readiness Center facility located at 2096 Kelly Island Road in Martinsburg, West Virginia. Non-R[redacted], SFC was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Martinsburg Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Martinsburg Readiness Center is currently staffed by six personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and a Drill/Assembly Hall.

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

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

The Martinsburg Readiness Center is housed in a one-story masonry building, configured in an L-shape, and consists of approximately 40% administrative space and 60% Assembly Hall.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust in the former fire range and in the adjoining supply room office indicated lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Martinsburg Readiness Center during this survey.

No visible suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a natural gas boiler that feeds radiant heaters throughout the building. The HVAC system located on the roof provides fresh/cool air from the building exterior into administrative areas of the building.

1.0 Facility Description and Operations

The Martinsburg Readiness Center is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The smaller one-story section of the building contains offices and administrative areas, and is finished with plaster walls, lay-in ceiling tiles and floor tile. The adjoining two-story Assembly/Drill Hall comprises the larger portion of the building. This area is finished with painted block walls and a concrete floor. According to site personnel there is a former indoor firing range at the facility that is currently used as a locker room. Based upon an observed existing bullet trap (no sand or lead shot was present) it does not appear that it has been properly decommissioned/converted for alternate use.

The primary activity at the Martinsburg Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is occasionally rented out for limited civic activities such as group meetings, trade shows and to other related local groups and organizations. The Martinsburg Readiness Center is currently staffed by approximately six personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

Wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of Housing and Urban Development (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the Locker Room – air grille, Supply Room – shelf, Fire Range – ventilation, Fire Range – light fixture, Fire Range – storage box, Fire Range – floor, and Assembly Hall floor outside the fire range indicated levels of lead in excess of 200 ug/ft^2.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 01	Assembly Hall - table	<110 ug/ft^2
Pb – 02	Locker Room - air grille	130 ug/ft^2
Pb – 03	Recruiter Office - desk top	<110 ug/ft^2
Pb – 04	Supply Room- top of shelf	220 ug/ft^2
Pb – 05	Fire Range - ventilation	4,700ug/ft^2
Pb – 06	Fire Range –bullet trap area	<110 ug/ft^2
Pb – 07	Fire Range – light fixture	120 ug/ft^2
Pb – 08	Fire Range - storage box	970,000 ug/ft^2
Pb – 09	Fire Range - floor	1,500 ug/ft^2
Pb-010	Assembly Hall - floor	22,000 ug/ft^2

ug/ft^2 = Micrograms per square foot.

The wipe samples collected in and near the former fire range detected levels of lead in excess of the ARNG action level of 200 micrograms per square foot (ug/ft^2). Laboratory analytical results are presented in Appendix C. Based upon the elevated lead wipe data it does not appear that the former indoor fire range has been properly decommissioned for use as a locker room.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. The paint on the walls appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Martinsburg Readiness Center during this survey. Thermal system piping observed throughout the facility is typically covered in suspect ACM or fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion during this survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Martinsburg Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Martinsburg Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Administrative Corridor	0.6	269	70.9	62.9
Room 102	0.7	271	70.7	62.8
Room 104	0.6	298	71.8	61.3
Foyer	0.6	328	73.0	63.3
Family Assistance Office	0.6	389	73.8	61.5
Kitchen	0.6	262	73.2	62.5
Boiler Room	0.6	264	73.8	63.6

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Assembly Hall	0.6	354	74.3	63.7
State Maintenance Office	0.6	263	74.6	61.2
Men's Restroom	0.6	300	75.2	63.6
Fire Range	0.6	267	74.9	55.4

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Martinsburg Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Martinsburg Readiness Center is heated by a natural gas boiler that feeds a radiant heating system. Supply and return air is provided by an HVAC system located on the roof.

4.1.2 HVAC Maintenance

Building personnel were unable to verify whether or not a maintenance schedule is in place, but informed AECOM that it is presumed that there will be filter changes at least twice yearly.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were generally adequate with the exception of the NCO Office.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Administrative Corridor	29.7	Y	5
NCO Office	28.1	N	50
Classroom	133.9	Y	30
Foyer	42.3	Y	10
Family Assistance Office	117.3	Y	50
Kitchen	52.1	Y	50
Boiler Room	33.1	Y	30
Assembly Hall	44.5	Y	10
State Maintenance Office	50.3	Y	50
Men's Restroom	20.7	Y	5
Former Fire Range (currently a locker room)	40.6	Y	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no garage associated with the Martinsburg Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Martinsburg Readiness Center.

AECOM did not observe any damaged, suspect asbestos-containing materials at the Martinsburg Readiness Center.

AECOM did not observe peeling paint during at the Martinsburg Readiness Center.

AECOM did not observe evidence of water intrusion at the Martinsburg Readiness Center.

Lighting levels measured throughout the facility were generally adequate with the exception of the NCO Office as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Based upon visual observation of an existing bullet trap and elevated lead wipe data, the former fire range needs to be properly converted.

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

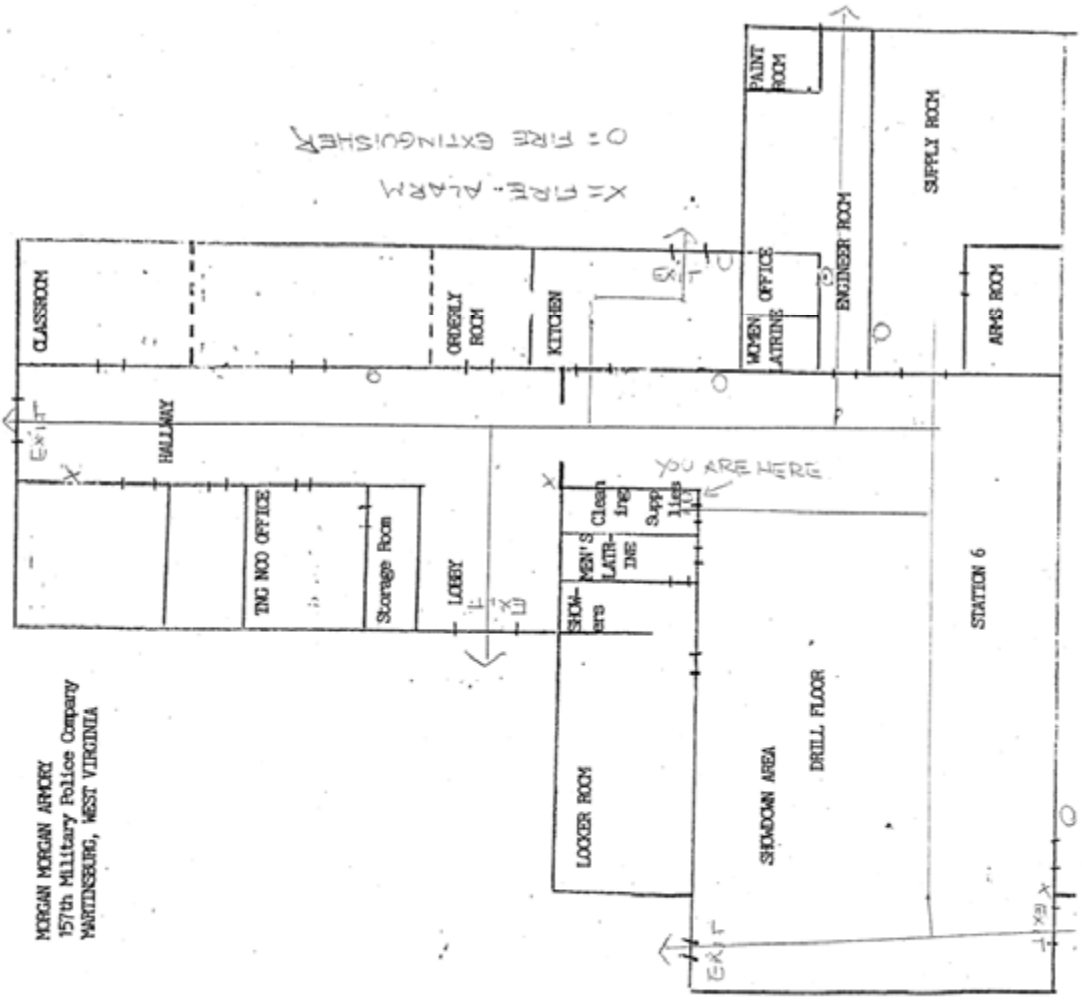
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

Appendix A

Martinsburg Readiness Center Facility Layout

AECOM



Appendix B

Martinsburg Readiness Center Photographs

AECOM

Photograph 1

View of Building Exterior

Photograph 2

View of Administrative Corridor

AECOM

Photograph 3

View of Kitchen

Photograph 4

View of Suspect Pipe Insulation in Assembly Hall

AECOM

Photograph 5

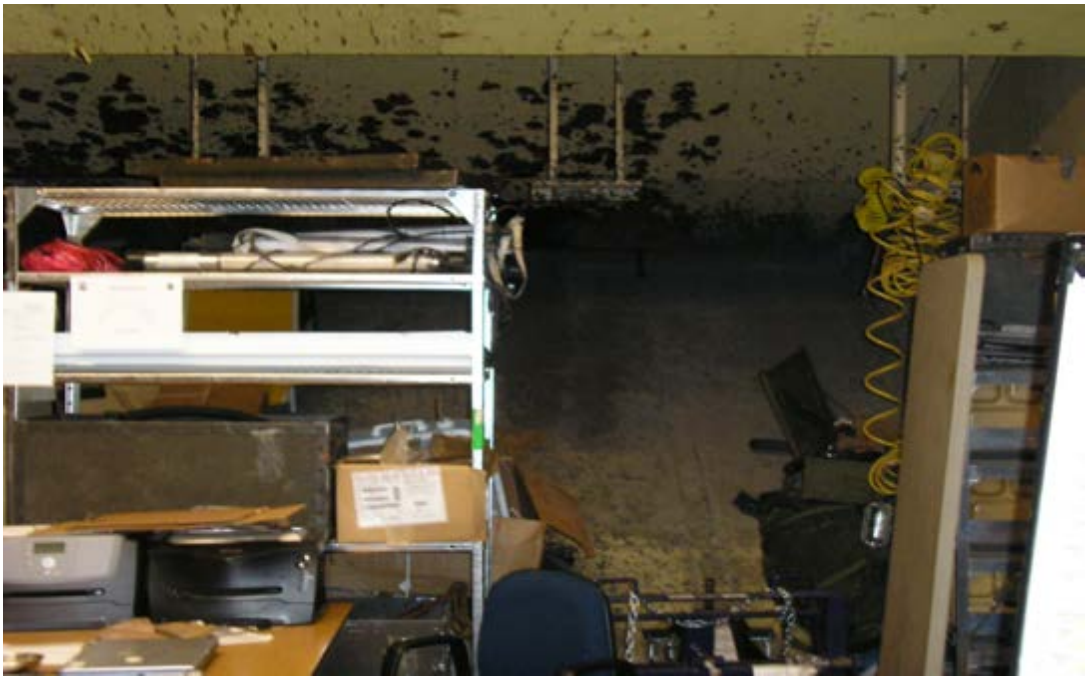
View of HVAC System in Assembly Hall

Photograph 6

View of Assembly Area

AECOM

Photograph 7



View of Former Bullet Trap Area

Photograph 8

Former Gun Range in Current Locker Room

AECOM

Photograph 9

Flammable Storage Cabinet

Photograph 10

View of Mechanical Room

AECOM

Photograph 11

View of Maintenance Storage Room

Photograph 12

View of Suspect Pipe Insulation in Office

AECOM

Photograph 13

View of Typical Office

Appendix C

Analytical Results

AECOM

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:**	Martinsburg RC	**Chain Of Custody:**	514245		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Martinsburg, WV	**Date Submitted:**	10/23/2012		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	AECOM		
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	10/26/2012	**Report Date:**	10/26/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments
13007927	Pb-001	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007928	Pb-002	Flame	Wipe	****	0.111	110 ug/ft^2	14	130 ug/ft^2	
13007929	Pb-3	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007930	Pb-4	Flame	Wipe	****	0.111	110 ug/ft^2	25	220 ug/ft^2	
13007931	Pb-005	Flame	Wipe	****	0.111	110 ug/ft^2	520	4700 ug/ft^2	
13007932	Pb-006	Flame	Wipe	****	0.111	110 ug/ft^2	<12	<110 ug/ft^2	
13007933	Pb-007	Flame	Wipe	****	0.111	110 ug/ft^2	13	120 ug/ft^2	
13007934	Pb-008	Flame	Wipe	****	0.111	110 ug/ft^2	110000	970000 ug/ft^2	
13007935	Pb-009	Flame	Wipe	****	0.111	110 ug/ft^2	170	1500 ug/ft^2	
13007936	Pb-010	Flame	Wipe	****	0.111	110 ug/ft^2	2400	22000 ug/ft^2	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AECOM

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:	Martinsburg RC	Chain Of Custody:	514245		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Martinsburg, WV	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/26/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

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

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Ana Non-Responsive

Technical Manager: Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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

WV

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514245

Mailing/Billing Information:

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

Submittal Information:

1. Job Name: MARTINSBURG, PC
2. Job Location: MARTINSBURG, WV
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone #
5. Submitted by: AECOM (Signature): Non-Respon

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Em Non-Responsive .aecom.com
Comments:	☐ 2 Day (Date Due) 10/30/12	☐ Fax us.army.mil
		☐ Ver us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
- ☐ NIOSH 7400 (QTY)
- ☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
- ☐ AHERA (QTY)
- ☐ NIOSH 7402 (QTY)
- ☐ Other (specify) (QTY)

PLM Bulk
- ☐ EPA 600 – Visual Estimate (QTY)
- ☐ EPA Point Count (QTY)
- ☐ NY State Friable 198.1 (QTY)
- ☐ Grav. Reduction ELAP 198.6 (QTY)
- ☐ Other (specify) (QTY)

MISC
- ☐ Vermiculite
- ☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
- ☐ ELAP 198.4/Chatfield (QTY)
- ☐ NY State PLM/TEM (QTY)
- ☐ Residual Ash (QTY)

TEM Dust*
- ☐ Qual. (pres/abs) Vacuum/Dust (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 (QTY)
- ☐ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
- ☐ Qual. (pres/abs) (QTY)
- ☐ ELAP 198.2/EPA 100.2 (QTY)
- ☐ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
ATEM Water samples °C)

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
- ☐ Pb Paint Chip (QTY)
- ☒ *Pb Dust Wipe (wipe type: ghost) 10 (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)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WATER/ OTHER	SOIL	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 10/30/12 @ 1000 Via: FedEx By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/15/12
Job Number: 60275401
Contact Person: Non-Responsive

Job Name: MARTINSBURG RC - WV
Job Location: 2096 Kelly Island RD
Address: MARTINSBURG, WV

Page 1 of 1
Company: AECOM
Phone Number: 315 569 1874
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Dusty Surface	16 in^2	ghost wipe
Pb 002	OFFICE	SUPPLY CABINET		
Pb-3	OFFICE	DESK		
Pb 4	OFFICE	FILE CABINET		
Pb-005	Former RANGE	ventilation Duct		
Pb-006		Bullet Trap		
Pb-007		Light Fixture		
Pb-008		Storage Box on		
Pb-009		Floor		
Pb-010	Outside RANGE	Floor		

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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

2. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998. http://www.dtic.mil/whs/directives/corres/pdf/605501p.pdf

3. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, 15 February 1990. http://armypubs.army.mil/epubs/pdf/R11_34.PDF

4. AR 40-5, Medical Service, Preventive Medicine, 25 May 2007. http://armypubs.army.mil/epubs/pdf/R40_5.PDF

5. AR 385-10, The Army Safety Program, 23 August 2007; Rapid Action Revision (RAR) issue date: 4 October 2011. http://armypubs.army.mil/epubs/pdf/R385_10.PDF

6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://armypubs.army.mil/epubs/pdf/P40_501.pdf

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8. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000. http://armypubs.army.mil/epubs/pdf/P40_503.PDF

9. UFC 3-410-01FA, Heating, Ventilating, and Air Conditioning, 15 May 2003, change 4, January 2010. http://www.wbdg.org/ccb/DOD/UFC/ufc_3_410_01fa.pdf

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

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

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

14. ANSI/ASHRAE 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

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

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

17. OSHA Instruction Letter 02-02-058, Lead Exposure in Construction, Office of Health Compliance Assistance, 13 December 1993.

18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

19. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006. http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 15 July 2004

MEMORANDUM FOR WVARNG, Logan/Foster Readiness Center, 150 Armory drive, Monaville, WV 24609

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive [redacted]

Encl Regional Industrial Hygienist

CF: OHM, MAJ Non-Responsive [redacted]

National Guard Armory
Foster Readiness Center – Monaville, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned. **RAC - 4**
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, men's locker room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Materials (floor tiles, tank insulation, and pipe insulation) suspected of containing asbestos were observed. Sampling for the insulation on the tank in the boiler room revealed that the insulation did contain asbestos. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials. In addition, the area on the tank where the asbestos sample was collected should be repaired. **RAC - 4**
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- An interview with the caretaker concerning indoor air quality concerns revealed that there was an odor in the supply room; the origin or type of the odor could not be determined. It is recommended that the odor be investigated. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible. **RAC - 4**

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Foster Readiness Center – Monaville, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Foster Readiness Center – Monaville, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive
Industrial Hygienist

Reviewed by: Non-Responsive
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Foster Readiness Center in Monaville, West Virginia. Non-Responsive performed the evaluation on 01 December 2003. The point of contact at the readiness center was caretaker Non-R i. The military unit was deployed on the date of the survey; therefore, no military personnel were present.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, men's locker room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles, tank insulation, and pipe insulation) suspected of containing asbestos were observed. Sampling for the insulation on the tank in the boiler room revealed that the insulation did contain asbestos. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials. In addition, the area on the tank where the asbestos sample was collected should be repaired.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- An interview with the caretaker concerning indoor air quality concerns revealed that there was an odor in the supply room; the origin or type of the odor could not be determined. It is recommended that the odor be investigated.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

Interviews with employees concerning ergonomic concerns were not conducted. The unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Foster Readiness Center in Monaville, West Virginia. Non-Responsive performed the evaluation on 01 December 2003. The point of contact at the readiness center was caretaker Non-Responsive The military unit was deployed on the date of the survey; therefore no military personnel were present.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any results above recommended levels from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at two locations. Two samples collected from the assembly hall (two fire extinguisher cabinet top surfaces) had lead concentrations of 1100 and 600 $\mu g/ft^2$. It is recommended that these surfaces and the immediate areas around these surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-15 (*Guidelines and Procedures for Indoor Firing Range (IFR) Rehabilitation, Conversion, and Cleaning*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, men's locker room, and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (clerk office #103 and recruiting office #105). The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods. Pease note that the military unit was deployed on the date of the survey; therefore, breathing zone air sampling was not conducted since no military personnel were present.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed at the armory in the clerk's office (room # 103) at two locations (wall below the window and wall adjacent to the door). The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that lead concentrations at both locations were below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles in rooms #103,

#104, #105, #107, #108, #109, and #110 (approximately 2557 square feet). The condition of the floor tiles in all the rooms was considered good.

In addition, suspected asbestos containing material in the form of pipe insulation remaining on pipe elbows/joints was observed throughout the facility (approximately 288 pipe elbows/joints). Pipe insulation was also observed in the boiler room at the following locations:

- on a decommissioned tank (the tank is no longer in use and a new boiler is in use), measuring approximately five linear feet;
- duct work, measuring approximately twelve linear feet; and
- on two pipes measuring approximately ten linear feet each.

The condition of the insulation materials was considered good (no rips, tears, or other damage) in most locations with the exception of the insulation on the tank in the boiler room; therefore, a bulk sample was collected. The results revealed asbestos in the form of chrysotile at 1-3 % and amosite at 10-20% (total asbestos 11-23%) in the gray powdery/fibrous material.

An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials. In addition, the area on the tank where the asbestos sample was collected should be repaired.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. No mold was observed, however, the inspection revealed water damage on the ceilings of the lobby and men's locker room.

The source of the water damage was likely from roof leaks. Please note that the damage in the lobby was being investigated as of the date of the survey and the damage in the enlisted men's latrine was old, as stated by the caretaker. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees were not conducted. The unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

2.3.2 Indoor Air Quality

Measurements for carbon dioxide, temperature and humidity revealed no indoor air quality concerns at the armory. An interview with the caretaker revealed that there was an odor in the supply room; the origin or type of the odor could not be determined. It is recommended that the odor be investigated. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 5. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the classrooms, kitchen, clerk's office (room #103), main hallway between offices, lobby, women's latrine (room #112) and men's latrine/shower room. Please note that the lighting in the recruiting office #105 did not meet the minimum requirements; however, additional lighting meeting minimum requirements is provided at the desk in the office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The bullet trap is the only remnant of the former firing range. The former firing range now consists of a portion of the drill hall floor and the bullet trap. The bullet trap space was converted into a storage room. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 100 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 65 $\mu g/ft^2$;
- stored item (flammable cabinet top surface) at 91 $\mu g/ft^2$;
- light fixture at 40000 $\mu g/ft^2$; and

- bullet trap at 320 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-15 (*Guidelines and Procedures for Indoor Firing Range (IFR) Rehabilitation, Conversion, and Cleaning*). It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

Interviews with employees concerning ergonomic concerns were not conducted. The unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Monaville, West Virginia
Date of Sampling: 01 December 2003

Sample Number	Location	Results, µg/ft² [a]
WVMON335-1	Assembly room -- soda machine top surface (See Building Layout Appendix B)	71
WVMON335-2	Assembly room – fire extinguisher cabinet top surface (See Building Layout -- Appendix B)	1100
WVMON335-3	Assembly room -- food serving cart top surface (See Building Layout Appendix B)	12
WVMON335-4	Assembly room - - filing cabinet top surface (See Building Layout Appendix B)	9.3
WVMON335-5	Assembly room - - fire extinguisher cabinet top surface (See Building Layout - Appendix B)	600
WVMON335-6	Field Blank	< 0.3 µg
WVMON335-13	Kitchen - grille top surface	4.8
WVMON335-14	Classroom filing cabinet top surface	6
WVMON335-15	Office #103 heater unit top surface	7.7
WVMON335-16	Men's Locker Room heater unit top surface	110
WVMON335-17	Supply #125 - - desk top	12
WVMON335-18	Field Blank	0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Monaville, West Virginia
Date of Sampling: 01 December 2003

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVMON335-A1	Clerk Office #103	0910-1105/115	2.4666	283.66	<0.004
WVMON335-A2	Recruiting Office #105	0911-1106/115	2.5045	288.02	<0.003
WVMON335-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Monaville, West Virginia
Date of Sampling: 01 December 2003

Sample Number	Location	Results, % By Weight
WVMON335-PC1	Clerk Office #103 below window	ND
WVMON335-PC2	Clerk Office #103 -- above door	ND

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 5

Illumination Readings

National Guard Armory

Monaville, West Virginia

Date of Sampling: 01 December 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Classrooms	24.6-52.3	70	No
Kitchen	3.0-6.7	70	No
Office #107	70.1-105.3	70	Yes
Recruiting Office #105	28.1-37.8	70	No*
Clerk Office #103	25.1-38.7	70	No
Main Hallway between offices	3.8-7.1	7.5	No
Lobby	24.3-39.8	70	No
Women's Latrine (Room #112)	9.3-26.5	40	No
Men's Latrine/Shower Room	18.3-31.2	40	No

[a] fc – Footcandles

* Additional lighting provided above one area, not representative of the entire space, luminance range 2.0-11.3 foot candles predominantly.

The readings were taken with a Cooke Corporation cat-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 4
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Monaville, West Virginia
Date of Sampling: 01 December 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Kitchen	1	734	30.5	72.3
Outdoors	-	493	40.0	46.2

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Monaville, West Virginia

Date of Sampling: 01 December 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVMON335-7	Outside the range	100
WVMON335-8	Floor	65
WVMON335-9	Stored Item (filing cabinet top surface)	91
WVMON335-10	Light Fixture	40000
WVMON335-11	Bullet Trap	320
WVMON335-12	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Foster Armory West Virginia ARNG	Nonaville

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
01 December 2008	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	unknown - unit deployed

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 946 2611	156th MP DET (Wave Order / Rear Det)	4	8

NO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	unknown	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
1	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
PVODTXXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
7439-92-1	Lead, inorganic dust & fumes, as Pb	2-moderate	C-Uncontrolled Respiratory
1332-21-4	Asbestos (Other)	2-moderate	↓
12001-29-5	Asbestos (Chrysotile)	3-low	
12172-73-5	Asbestos (Amosite)	2-moderate	

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAILABLE	CIV

SECTION 6. COMMENTS

Non-Responsive

___No comments See attached sheet

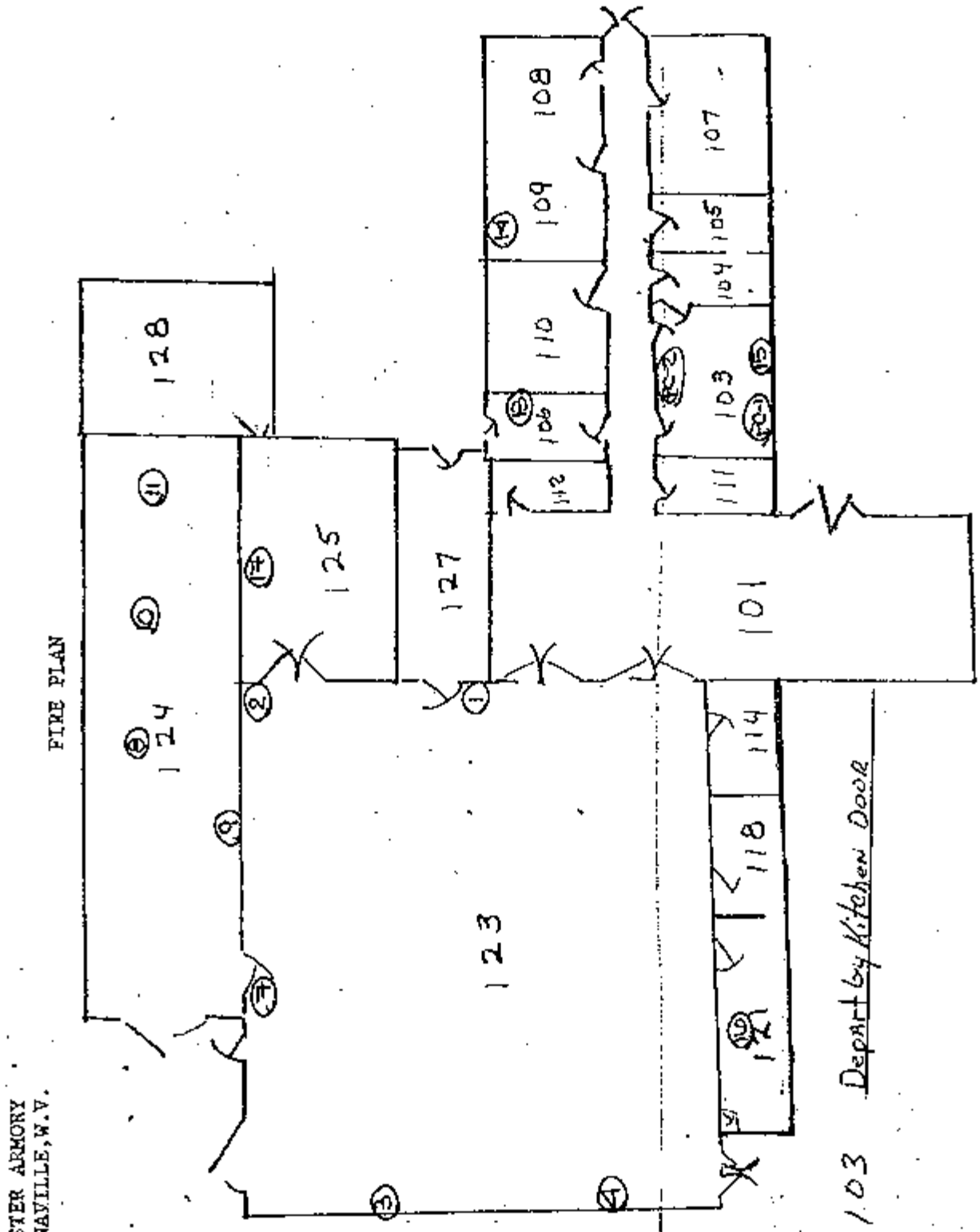
conducted survey. Building contains one full time civilian employee and an unknown amount of military staff due to that the military unit was deployed at date of survey and no military emp. list was obtained.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVMON335	**Chain Of Custody:**	121251
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Monaville, WV	**Date Analyzed:**	12/16/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	16-Dec-03

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
0413472	WVMON335-1	Furnace	Wipe	****	0.111	67.51	ug/ft²	71	ug/ft²	
0413473	WVMON335-2	Flame	Wipe	****	0.111	108.01	ug/ft²	1100	ug/ft²	
0413474	WVMON335-3	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0413475	WVMON335-4	Furnace	Wipe	****	0.111	2.70	ug/ft²	9.3	ug/ft²	
0413476	WVMON335-5	Furnace	Wipe	****	0.111	67.51	ug/ft²	600	ug/ft²	
0413477	WVMON335-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413478	WVMON335-7	Furnace	Wipe	****	0.111	33.75	ug/ft²	100	ug/ft²	
0413479	WVMON335-8	Furnace	Wipe	****	0.111	13.50	ug/ft²	65	ug/ft²	
0413480	WVMON335-9	Furnace	Wipe	****	0.111	67.51	ug/ft²	91	ug/ft²	
0413481	WVMON335-10	Flame	Wipe	****	0.111	108.01	ug/ft²	40000	ug/ft²	
0413482	WVMON335-11	Furnace	Wipe	****	0.111	67.51	ug/ft²	320	ug/ft²	
0413483	WVMON335-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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]

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.

Electron & Optical Microscopy Services

NVLAP
NY ELAP
AIHA

CERTIFICATE OF ANALYSIS

Client:	National Guard Bureau	**Job Name:**	WVMON355	**Chain Of Custody:**	122731
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Monaville, WV	**Date Analyzed:**	3/1/2004
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	01-Mar-04

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0424125	WVMON335-13	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.8	ug/ft²	
0424126	WVMON335-14	Furnace	Wipe	****	0.111	2.70	ug/ft²	6	ug/ft²	
0424127	WVMON335-15	Furnace	Wipe	****	0.111	2.70	ug/ft²	7.7	ug/ft²	
0424128	WVMON335-16	Furnace	Wipe	****	0.111	33.75	ug/ft²	110	ug/ft²	
0424129	WVMON335-17	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0424130	WVMON335-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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: Non-Responsive

Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAPOR329-A1 through WVWIL335-A3
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-6027
DCL Sample ID No.:	03-35454 through 03-35502
Sample Receipt Date:	12/11/2003
Preparation Date:	12/15/03
Analysis Date:	12/15/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VAPOR329-A1	03-35454	362.12	ND	<0.003
VAPOR329-A2	03-35455	355.29	ND	<0.003
VAPOR329-A3	03-35456	0	ND	-
VAVIR329-A1	03-35462	241.75	ND	<0.004
VAVIR329-A2	03-35463	239.35	ND	<0.004
VAVIR329-A3	03-35464	0	ND	-
WVWAL338-A1	03-35466	255.30	ND	<0.004
WVWAL338-A2	03-35467	246.10	ND	<0.004
WVWAL338-A3	03-35468	0	ND	-
WVBLU338-A1	03-35470	340.39	ND	<0.003
WVBLU338-A2	03-35471	326.60	ND	<0.003
WVBLU338-A3	03-35472	0	ND	-
VAGAT337-A1	03-35473	243.02	ND	<0.004
VAGAT337-A2	03-35474	254.11	ND	<0.004
VAGAT337-A3	03-35475	0	ND	-
VAHAM330-A1	03-35476	250.47	ND	<0.004
VAHAM330-A2	03-35477	255.99	ND	<0.004
VAHAM330-A3	03-35478	0	ND	-
VABIG336-A1	03-35479	343.24	ND	<0.003
VABIG336-A2	03-35480	307.31	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		96.	
% Recovery	LCS 2		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
VABIG336-A3	03-35481	0	ND	-
WVHIN339-A1	03-35486	238.94	ND	<0.004
WVHIN339-A2	03-35487	237.41	ND	<0.004
WVHIN339-A3	03-35488	0	ND	-
WVMON335-A1	03-35489	283.66	ND	<0.004
WVMON335-A2	03-35490	288.02	ND	<0.003
WVMON335-A3	03-35491	0	ND	-
WVRIC339-A1	03-35495	299.70	ND	<0.003
WVRIC339-A2	03-35496	296.83	ND	<0.003
WVRIC339-A3	03-35497	0	ND	-
VACED337-A1	03-35498	243.02	ND	<0.004
VACED337-A2	03-35499	254.11	ND	<0.004
VACED337-A3	03-35500	0	ND	-
WVWIL335-A1	03-35501	247.64	ND	<0.004
WVWIL335-A2	03-35502	0	ND	-
WVWIL335-A3	03-35503	252.18	ND	<0.004
	Prep Blank		ND	
% Recovery	LCS 3		101.	
% Recovery	LCS 4		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted] _____
Analyst

Non-Responsive [redacted] _____
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory	**Location:**	Monaville
	Date:	12/1/2003

Sample 1

Sample Number: WVMON335-A1

Pump:	648339	
	Pre Flow Rate	**Post Flow Rate**
	2.485	2.463
	2.479	2.453
	2.467	2.449
	2.48	2.457
Average	**2.478**	**2.456**

Average Pre and Post	**2.4666**
Time 1	9:10
Time 2	11:05
Total Time Sampled	**1:55**
Minutes Sampled	115.00
Volume	**283.66 Liters**

Sample 2

Sample Number: WVMON335-A2

Pump:	647615	
	Pre Flow Rate	**Post Flow Rate**
	2.538	2.489
	2.534	2.491
	2.517	2.476
	2.512	2.479
Average	**2.525**	**2.484**

Average Pre and Post	**2.5045**
Time 1	9:11
Time 2	11:06
Total Time Sampled	**1:55**
Minutes Sampled	115.00
Volume	**288.02 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory Location: Nonaville, WV
Date: 12/1/03

Sample 1
Sample Number: WVHONS225-A1
Pump: 0488289

	Pre Flow Rate	Post Flow Rate
	2485	2463
	2479	2453
Average	2467	2449
	2480	2457
Average Pre and Post	2478	2456

Time 1 0910
Time 2 1105
Total Time Sampled
Minutes Sampled

Volume Liters

Sample 2
Sample Number: WVHONS225-A2
Pump: 0476015

	Pre Flow Rate	Post Flow Rate
	2538	2489
	2534	2491
Average	2517	2476
	2512	2479
Average Pre and Post	2525	2484

Time 1 0911
Time 2 1106
Total Time Sampled
Minutes Sampled

Volume Liters

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:

Non-Responsive

Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	VAPOR329-B1 through WVWIL335-B1
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-6027
DCL Sample ID No.:	03-35460 through 03-35505
Sample Receipt Date:	12/11/03
Analysis Date:	12/12/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive

Analyst

Non-Responsive

Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

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12/12/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia / Virginia
Set ID: 03-A-6027

Client Sample ID:	VAPOR329-B1	VAPOR329-B2	VAB16336-B1	VAB16336-B2	WVMON335-B1
DCL Sample ID:	03-35460	03-35461	03-35484	03-35485	03-35494
Macroscopic Examination					
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Homog.	Homog.	Homog.	Homog.
Color:	Grey	Black	Grey	Grey	Grey
Texture:	Crmby/Fbrs	Compact	Crumbly	Crmby/Fbrs	Pwdry/Fbrs
Description:	Material	Tile	Material	Material	Material
Analysis:	PLM	PLM	PLM	PLM	PLM
Asbestiform Minerals					
% Chrysotile:		>1≤3	>1≤3		>1≤3
% Amosite:					>10≤20
% Crocidolite:					
% Tremolite - Actinolite:					
% Anthophyllite:					
% Total Asbestos:	**ND**	**>1≤3**	**>1≤3**	**ND**	**>11≤23**
Other Materials					
% Cellulose:	>1≤3			>5≤10	
% Fiberglass:	>20≤30			>20≤30	>20≤30
% Other Fibers:					
% Resin/Binder:		>10≤20			
% Non Fibrous:	>60≤70	>70≤80	>90≤100	>50≤60	>40≤50

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

[redacted]

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

12/12/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia / Virginia
Set ID: 03-A-6027

Client Sample ID:	WVWIL335-B1
DCL Sample ID:	03-35505
Macroscopic Examination	
Accepted/Rejected:	Accepted
Homogeneity:	Homog.
Color:	Grey
Texture:	Pwdry/Fbrs
Description:	Material
Analysis:	PLM
Asbestiform Minerals	
% Chrysotile:	>3≤5
% Amosite:	>10≤20
% Crocidolite:	
% Tremolite - Actinolite:	
% Anthophyllite:	
% Total Asbestos:	>13≤25
Other Materials	
% Cellulose:	Trace
% Fiberglass:	
% Other Fibers:	
% Resin/Binder:	
% Non Fibrous:	>70≤80

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAPOR329-PC1 through WVMON335-PC2
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-6027
DCL Sample ID No.:	03-35457 through 03-35493
Sample Receipt Date:	12/11/2003
Preparation Date:	12/16/2003
Analysis Date:	12/17/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

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Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
VAPOR329-PC1	03-35457	64.	0.0064
VAPOR329-PC2	03-35458	ND	ND
VAPOR329-PC3	03-35459	87.	0.0087
VAVIR329-PC1	03-35465	ND	ND
WVWAL338-PC1	03-35469	960.	0.096
VABIG336-PC1	03-35482	ND	ND
VABIG336-PC2	03-35483	29.	0.0029
WVMON335-PC1	03-35492	ND	ND
WVMON335-PC2	03-35493	ND	ND
	Prep Blank	ND	
% Recovery	LCS	87.	
% Recovery	35493 MS	94.	
% Recovery	35493 MSD	94.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Appendix D
References

References

Title 29. Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR. Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint. Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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Shaw Environmental, Inc.

National Guard Armory
Morgantown Readiness Center – Morgantown, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

National Guard Armory
Morgantown Readiness Center – Morgantown, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
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27 May 2004

Prepared by: Non-Responsive

Industrial Hygienist

Reviewed by: Non-Responsive

Business Line Manager

Table of Contents

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Morgantown Readiness Center in Morgantown, West Virginia. Non-Responsive performed the evaluation on 31 October 2003. The point of contact at the readiness center was CW4 Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall and gym. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, gym, supply room office area, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. The condition of the insulation materials on the joints/elbows in the boiler room was considered poor; therefore, a bulk sample was collected. The results revealed that the gray fibrous/crumbly insulation material did contain asbestos. It is recommended that the exposed asbestos containing insulation material be repaired, and an operations and maintenance plan followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Water damage was observed in the converted firing range and boiler room. The source of the water damage was likely from roof leaks or pipe leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the boiler room. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

- Indoor air quality measurements for temperature revealed a level that exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in few of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Employees should not use the locker room in the converted firing range until the area has been decontaminated.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Morgantown Readiness Center in Morgantown, West Virginia. Non-Responsive performed the evaluation on 31 October 2003. The point of contact at the readiness center was CW4 Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at two locations. One sample collected from the assembly hall (fire extinguisher cabinet top surface) had a lead concentration of 640 $\mu g/ft^2$. Also, the sample collected in the gym (locker top surface) had a lead concentration of 1200 $\mu g/ft^2$. It is recommended that these surfaces and the immediate area around the surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, gym, the supply room office area, and locations in the converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles in the lobby, main hallway, hallway adjacent to the men's latrine, six offices, classroom, kitchen, and hallway adjacent to the classroom (approximately 2693 square feet). The condition of the floor tiles was considered good. In addition, suspected asbestos containing material in the form of insulation was observed in the boiler room on approximately four pipe joints/elbows. It could also be assumed that the suspected asbestos containing insulation remains in the pipe joints/elbows throughout the facility. The condition of the insulation materials on the joints/elbows in the boiler room was considered poor; therefore, a bulk sample was collected. The results

revealed asbestos in the form of chrysotile at 20-30 % in the gray fibrous/crumbly material.

The exposed asbestos containing insulation material should be repaired. An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage in the converted firing range. In addition, there was water damage and possible mold on the pipes and pipe joints/elbows in the boiler room.

The source of the water damage was likely from roof leaks or pipe leaks. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interview with employees and measurements for carbon dioxide and humidity revealed no indoor air quality concerns at the armory. However, measurements for temperature revealed a level that exceeded the American Society of Heating,

Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in few areas, including the supply room (office area) and kitchen.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The room was converted into a locker room/maintenance bay. The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 83 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 82 $\mu g/ft^2$;
- bullet trap floor at 9600 $\mu g/ft^2$;
- bullet trap wall at 64000 $\mu g/ft^2$;
- stored item (flammable cabinet top surface) 24 $\mu g/ft^2$; and
- light fixture (light shield surface) at 85000 $\mu g/ft^2$.

The lead levels at three of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and

items have been cleaned and re-sampled. Employees should not use the locker room in the converted firing range until the area has been decontaminated.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, ergonomic concerns, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, visible mold, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Morgantown, West Virginia
Date of Sampling: 31 October 2003

Sample Number	Location	Results, µg/ft² [a]
WVMOR304-7	Assembly room -- table top (See Building Layout -- Appendix B)	4.5
WVMOR304-8	Assembly room - table top (See Building Layout - Appendix B)	22
WVMOR304-9	Assembly room - vending machine top surface (See Building Layout -- Appendix B)	6.5
WVMOR304-10	Assembly room -- soda machine top surface (See Building Layout – Appendix B)	44
WVMOR304-11	Assembly room - fire extinguisher cabinet top surface (See Building Layout - Appendix B)	640
WVMOR304-12	Field Blank	< 0.3 µg
WVMOR304-20	First Floor - Supply Room (office) desktop	74
WVMOR304-21	First Floor – Kitchen - dough mixer top surface	2.7
WVMOR304-22	First Floor – Gym – locker top surface	1200
WVMOR304-23	First Floor office - cabinet top surface	4.1
WVMOR304-24	Field Blank	< 0.3 µg
WVMOR304-25	First Floor -- office – safe top surface	21
WVMOR304-26	First Floor - office - windowsill	6.5
WVMOR304-27	First Floor - Classroom - table top	3.2

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Morgantown West Virginia
Date of Sampling: 31 October 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVMOR304-A1	Non-Responsive	0732-0937/125	2.4819	310.23	<0.003
WVMOR304-A2		0800-0943/103	2.5488	262.52	<0.004
WVMOR304-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Morgantown, West Virginia
Date of Sampling: 31 October 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Drill Hall	1	558	39.2	76.5
Outdoors	-	492	42.7	69.1

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Morgantown, West Virginia

Date of Sampling: 31 October 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Classroom	30.1-93.5	70	Some areas
Day Room	23.0-87.6	70	Some areas
Supply room (office area)	6.9-39.8	70	No
Office (entrance facing classroom hallway)	25.1-99.3	70	Some areas
Office	32.3-81.4	70	Some areas
Office	41.6-74.5	70	Some areas
Women's Latrine	40.1-100.9	40	Yes
Shower room	20.7-29.3	20	Yes
Kitchen	12.1-16.43	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Morgantown, West Virginia

Date of Sampling: 31 October 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVWES302-13	Floor Outside of Range	83
WVWES302-14	Floor	82
WVWES302-15	Bullet Trap Floor	9600
WVWES302-16	Bullet Trap Wall	64000
WVWES302-17	Stored Item - flammable cabinet top surface	24
WVWES302-18	Blank	< 0.3 µg
WVWES302-19	Light Fixture - light shield surface	85000

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Morgantown Armory West Virginia ARNG	Morgantown

OCATION/CODE	OPERATION/CODE
Administrative Areas/AA	Administrative Operations/ADO

URVEY DATE	EVALUATOR (Initials)
31 October 2003	Non-Responsive

AACOM/CODE	SUBMACOM/CODE	SUPERVISOR
ARMY NATIONALGUARD	XX	Non-Responsive CW4

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 292 3283	BHLX B 1/201st FA	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
	4			

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

AAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video display terminal	3-low	D=Uncontrolled Physical
7439-92-1	Lead Inorganic dust and fumes as Pb	2-moderate	C Uncontrolled Respiratory
12001-29-5	Asbestos (Chrysotile)	1-high	C Uncontrolled Respiratory
1332-21-4	Asbestos (Other)	2-moderate	C Uncontrolled Respiratory
POHEATSTR	Heat Stress	3-low	D Uncontrolled Physical

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive		A	M	NOT AVAILABLE	MIL
		E	↓	↓	↓
		E			
		N			
			↓	↓	CIV

SECTION 6. COMMENTS

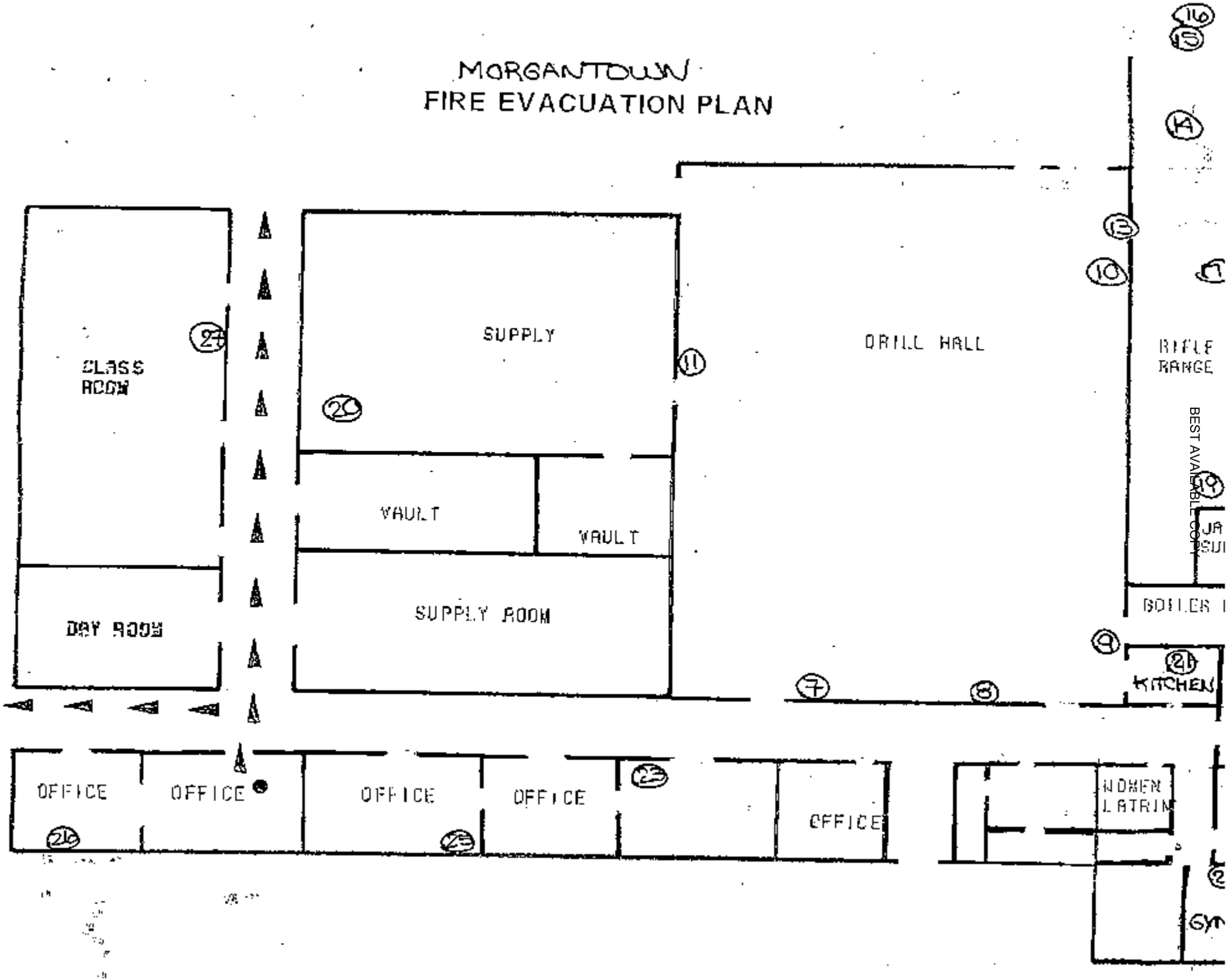
Non-Responsive ___No comments ___See attached sheet conducted the survey. The building contains 4 military staff and 1 civilian caretaker. Military staff perform mainly administrative functions.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Morgantown	**Chain Of Custody:**	119256
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result		Comments
0408521	WVMOR304-7	Furnace	Wipe	****	0.111	2.70	ug/ft^2	4.5	ug/ft^2	
0408522	WVMOR304-8	Furnace	Wipe	****	0.111	2.70	ug/ft^2	22	ug/ft^2	
0408523	WVMOR304-9	Furnace	Wipe	****	0.111	2.70	ug/ft^2	6.5	ug/ft^2	
0408524	WVMOR304-10	Furnace	Wipe	****	0.111	13.50	ug/ft^2	44	ug/ft^2	
0408525	WVMOR304-11	Furnace	Wipe	****	0.111	67.51	ug/ft^2	640	ug/ft^2	
0408526	WVMOR304-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408527	WVMOR304-13	Furnace	Wipe	****	0.111	13.50	ug/ft^2	83	ug/ft^2	
0408528	WVMOR304-14	Furnace	Wipe	****	0.111	13.50	ug/ft^2	82	ug/ft^2	
0408529	WVMOR304-15	Furnace	Wipe	****	0.111	3375.34	ug/ft^2	9600	ug/ft^2	
0408530	WVMOR304-16	Furnace	Wipe	****	0.111	10126.01	ug/ft^2	64000	ug/ft^2	
0408531	WVMOR304-17	Furnace	Wipe	****	0.111	6.75	ug/ft^2	24	ug/ft^2	
0408532	WVMOR304-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408533	WVMOR304-19	Flame	Wipe	****	0.111	108.01	ug/ft^2	85000	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:**	Morgantown	**Chain Of Custody:**	119256
Address:	301-1H Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

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

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.

Analy [redacted] Non-Responsive

Technical Manager: Non-Responsive

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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:**	WVMOR304	**Chain Of Custody:**	121265
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Morgantown	**Date Analyzed:**	12/29/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	29-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413616	WVMOR304-20	Furnace	Wipe	****	0.111	67.51	ug/ft²	74	ug/ft²	
0413617	WVMOR304-21	Furnace	Wipe	****	0.111	2.70	ug/ft²	2.7	ug/ft²	
0413618	WVMOR304-22	Flame	Wipe	****	0.111	108.01	ug/ft²	1200	ug/ft²	
0413619	WVMOR304-23	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.1	ug/ft²	
0413620	WVMOR304-24	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413621	WVMOR304-25	Furnace	Wipe	****	0.111	2.70	ug/ft²	21	ug/ft²	
0413622	WVMOR304-26	Furnace	Wipe	****	0.111	2.70	ug/ft²	6.5	ug/ft²	
0413623	WVMOR304-27	Furnace	Wipe	****	0.111	2.70	ug/ft²	3.2	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.

Analys Non-Responsive **Technical Manager:** Non-Responsive

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DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive

Analyst

Non-Responsive

Reviewer

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513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
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NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVMOR304-A1	03-33079	310.23	ND	<0.003
WVMOR304-A2	03-33080	262.52	ND	<0.004
WVMOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory | Location: Morgantown | Date: 11/4/2003

Sample 1

Sample Number: WVMOR304-A1

Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.497	2.452
	2.5	2.458
	2.497	2.47
	2.514	2.467
Average	**2.502**	**2.462**

Average Pre and Post **2.4819**

Time 1	7:32
Time 2	9:37
Total Time Sampled	**2:05**
Minutes Sampled	125.00

Volume **310.23 Liters**

Sample 2

Sample Number: WVMOR304-A2

Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.559	2.497
	2.589	2.557
	2.559	2.535
	2.575	2.519
Average	**2.571**	**2.527**

Average Pre and Post **2.5488**

Time 1	8:00
Time 2	9:43
Total Time Sampled	**1:43**
Minutes Sampled	103.00

Volume **262.52 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory
Date:

Location: WVMOR304 - MORGANTOWN

Sample 1

Sample Number: A1

Pump: 648337

	Pre Flow Rate	Post Flow Rate
	2497	2452
	2500	58
Average	2497	70
	2514	67
Average Pre and Post	2502	2462

Time 0732
Time 0937
Total Time Sampled
Minutes Sampled

Volume Litere

Sample 2

Sample Number: A2

Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2589	2497
	2589	2557
Average	2559	2535
	2575	2519
Average Pre and Post	2571	2527

Time 1 0800
Time 2 0948
Total Time Sampled
Minutes Sampled

Volume Liters

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:

Non-Responsive

Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	WVKIN312-B1 through WVFAI303-BI
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-5546
DCL Sample ID No.:	03-33112 through 03-33132
Sample Receipt Date:	11/12/03
Analysis Date:	11/13/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive

Analyst

Non-Responsive

Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

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11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVKIN312-B1	WVBUC301-B1	WVBUC301-B1	WVPHR308-B1	WVSAL303-B1
DCL Sample ID:	03-33112	03-33118A	03-33118B	03-33122	03-33123
Macroscopic Examination					
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Layered	Layered	Homog.	Layered
Color:	Grey	Green	Black	Grey	Inseparable Red/Black
Texture:	Crmby/Fbrs	Compact	Resinous	Fbrs/Crmby	Cmpt/Resns
Description:	Material	Tile	Mastic	Material	Tile/Mastic
Analysis:	PLM	PLM	PLM	PLM	PLM
Asbestiform Minerals					
% Chrysotile:	>20≤30	>1≤3	>3≤5	>10≤20	>1≤3
% Amosite:					
% Crocidolite:					
% Tremolite - Actinolite:					
% Anthophyllite:					
% Total Asbestos:	**>20≤30**	**>1≤3**	**>3≤5**	**>10≤20**	**>1≤3**
Other Materials					
% Cellulose:			>1≤3		
% Fiberglass:				>40≤50	
% Other Fibers:					
% Resin/Binder:		>10≤20	>70≤80		>20≤30
% Non Fibrous:	>60≤70	>70≤80	>10≤20	>20≤30	>60≤70

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVMOU307-B1	WVMOR304-B1	WVSPE310-B1	WVFAI303-B1
DCL Sample ID:	03-33126	03-33127	03-33128	03-33132
Macroscopic Examination				
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Homog.	Homog.	Homog.
Color:	Brown	Grey	Grey	Grey
Texture:	Compact	Crmby/Fbrs	Crmby/Fbrs	Fbrs/Crmby
Description:	Tile	Material	Material	Material
Analysis:	PLM	PLM	PLM	PLM
Asbestiform Minerals				
% Chrysotile:	>1≤3	>20≤30	Trace	>50≤60
% Amosite:				
% Crocidolite:				
% Tremolite - Actinolite:				
% Anthophyllite:				
% Total Asbestos:	**>1≤3**	**>20≤30**	**Trace**	**>50≤60**
Other Materials				
% Cellulose:				
% Fiberglass:			>30≤40	
% Other Fibers:				
% Resin/Binder:	>10≤20			
% Non Fibrous:	>70≤80	>60≤70	>50≤60	>30≤40

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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Shaw™ Shaw Environmental, Inc.

National Guard Armory
Moundsville Readiness Center – Moundsville, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

National Guard Armory
Moundsville Readiness Center – Moundsville, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Moundsville Readiness Center in Moundsville, West Virginia. Non-Responsi Non-Respons performed the evaluation on 03 November 2003. The point of contact at the readiness center was SSG Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns

- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, classroom, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials suspected of containing asbestos were observed. One area had a broken tile; therefore a bulk sample was collected. The results revealed asbestos in the tile material. Broken floor tiles at the armory should be replaced. In addition, an operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. In addition, stored items should be wet-wiped before being removed from the area.

Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Moundsville Readiness Center in Moundsville, West Virginia. Non-Responsiv Non-Responsi performed the evaluation on 03 November 2003. The point of contact at the readiness center was SSG Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at one location. One sample collected from the assembly hall (soda machine top surface) had a lead concentration of 250 $\mu g/ft^2$. It is recommended that this surface and the immediate area around this surface be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, classroom, and converted firing range. Please note that the

Recommendations for Surface Lead Dust in Armories (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles in the CO office, ISG office, hallway (door #9), recruiter's office (door #4), common/chemical room (door #8), Maintenance room, XO office, orderly/training room, lobby and main hallway, classrooms, branch room (door #17), branch office, branch storage, office (door #16), office (door #15), administrative office (door #12), office (door #14), and kitchen (approximately 7158 square feet). The condition of the floor tiles was considered good in most areas. The condition of the tiles in offices at the desk areas where the chairs sit were predominately average (worn). One area, administrative office (door #12), had a broken tile; therefore a bulk sample was collected. The results revealed asbestos in the form of chrysotile at 1-3 % in the brown compact tile material.

Broken floor tiles at the armory should be replaced. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed no current water damage or mold at the armory. Please note that old water damage was observed in the classroom on the wall and ceiling, however, the source of the water damage (likely from roof leaks) had been repaired.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interview with employees and measurements for carbon dioxide, humidity, and temperature revealed no indoor air quality concerns at the armory. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the library/classroom/ copier room (office), orderly/training room , classroom, women's latrine, kitchen, administrative office (door #12) and ISG office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The bullet trap is the only remnant of the former firing range. The former firing range consisted of a portion of the drill hall floor and the bullet trap. The bullet trap space

was converted into a storage room. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 210 micrograms lead per square foot ($\mu g/ft^2$);
- floor (bullet trap area) at 820 $\mu g/ft^2$; and
- stored item (cabinet top surface) at 26 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, water damage, visible mold, ergonomic concerns, indoor air quality, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Moundsville, West Virginia
Date of Sampling: 03 November 2003

Sample Number	Location	Results, µg/ft² [a]
WVMOU307-7	Assembly room – soda machine top surface (See Building Layout – Appendix B)	250
WVMOU307-8	Assembly room – table top (adjacent to storage room/converted firing range) (See Building Layout Appendix B)	4.6
WVMOU307-9	Assembly room – stored item (See Building Layout Appendix B)	16
WVMOU307-10	Assembly room – kitchen serving counter top surface (See Building Layout – Appendix B)	32
WVMOU307-11	Assembly room – table top (adjacent to kitchen) (See Building Layout – Appendix B)	18
WVMOU307-12	Field Blank	0.35 µg
WVMOU307-16	Kitchen – bottom shelf surface	6.7
WVMOU307-17	Classroom – heater vent top surface	91
WVMOU307-18	Field Blank	< 0.3 µg
WVMOU307-19	Branch Room (Gym) – heater unit vent surface	32
WVMOU307-20	Orderly room – cabinet top surface	8.5
WVMOU307-21	Office #12 – heater unit vent surface	8.8
WVMOU307-22	Recruiter's Office #4 – table top	4.4
WVMOU307-23	Locker Room – locker top surface	4.9
WVMOU307-24	Field Blank	1.1 µg
WVMOU307-25	Supply Room – desktop	15

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Moundsville West Virginia
Date of Sampling: 03 November 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVMOU307-A1	Non-Responsive	0832-1033/121	2.4820	300.32	<0.003
WVMOU307-A2		0835-1033/118	2.5084	295.99	<0.003
WVMOU307-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Moundsville, West Virginia
Date of Sampling: 03 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Orderly Room #3	1	609	55.0	68.5
Outdoors	-	557	80.2	62.1

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q-Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Moundsville, West Virginia

Date of Sampling: 03 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Supply Room #11	64.2-123	70	Some areas
Library/Classroom/Copier Room (office)	8.1-18.5	70	No
Orderly/Training Room	9.8-12.9	70	No
Classroom	15.7-36.8	70	No
Women's Latrine	3.6-18.94	40	No
Kitchen	7.4-27.3	70	No
Administrative Office	19.6-28.6	70	No
1SG Office	9.6-34.3	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Moundsville, West Virginia

Date of Sampling: 03 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVMOU307-13	Floor Outside of Range (Bullet Trap)	210
WVMOU307-14	Floor (Bullet Trap Area)	820
WVMOU307-15	Stored Item -- Cabinet Top	26

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Moundsville Armory West Virginia ARNG	moundsville

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
03 November 2003	MD

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SSG

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 845 2900	Detachment 1, Company C 1092D Engineer Battalion	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	4	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FEET	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			[illegible]			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D Uncontrolled Physical
7439-92-1	Lead, Inorganic dusts & fumes as Pb	2-moderate	C-Uncontrolled Respiratory
12001-29-5	Asbestos (Chrysotile)	3-low	C Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive [redacted]			M	unavailable	NUC
			↓	↓	↓
					CIV

SECTION 6. COMMENTS

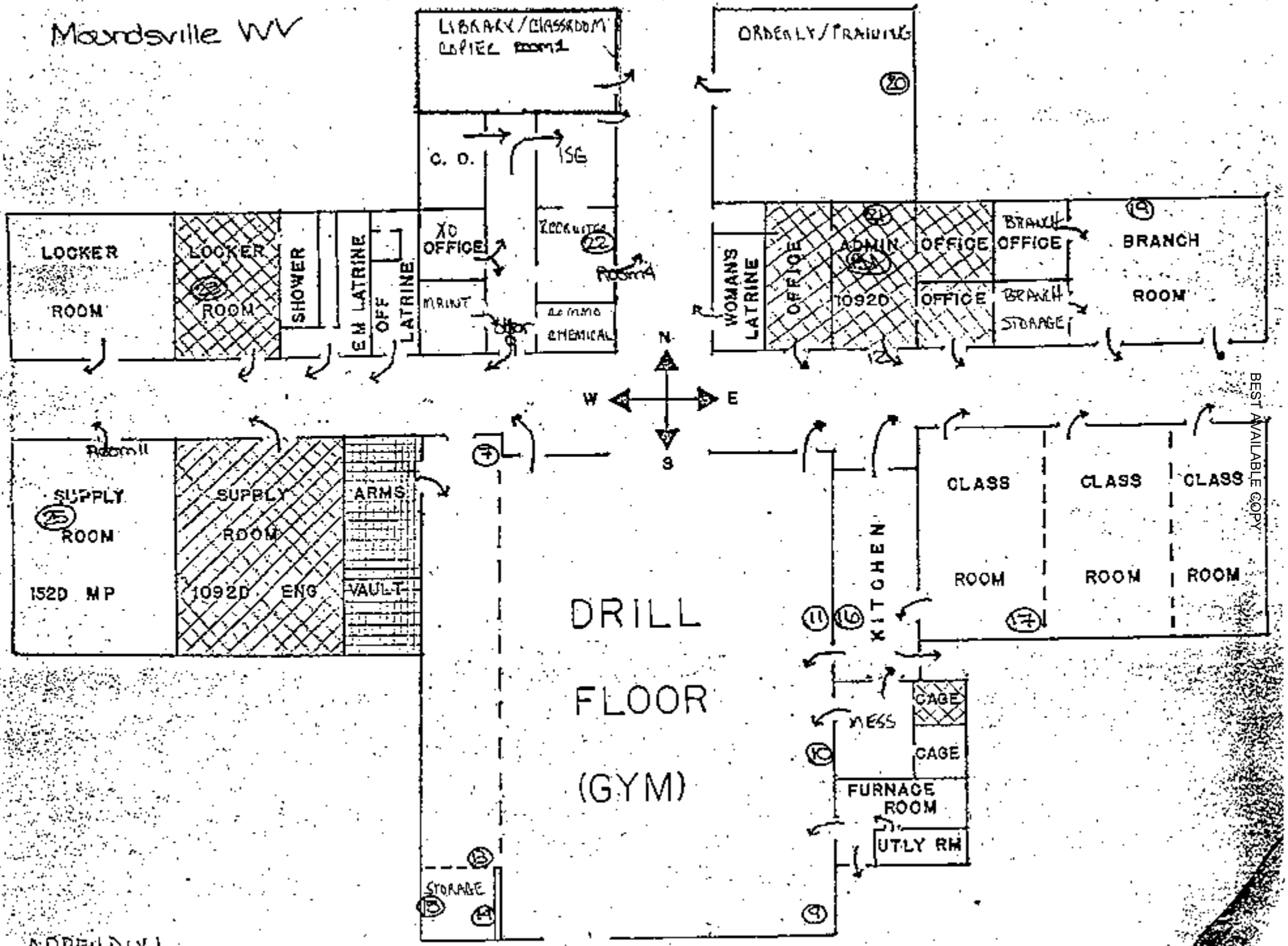
Non-Responsive [redacted] No comments See attached sheet conducted survey. Building contains 4 full time Militar employees and 1 civilian caretaker, full time military staff perform mainly administrative functions

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Moundsville	**Chain Of Custody:**	119260
Address:	301-lH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted] (b) (6)
		P.O. Number:	1103	**Report Date:**	19-Nov-03

Attention: [redacted] (b) (6)

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
0408560	SVMOU307-7	Furnace	Wipe	****	0.111	67.51	ug/ft²	250	ug/ft²	
0408561	SVMOU307-8	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.6	ug/ft²	
0408562	SVMOU307-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	16	ug/ft²	
0408563	SVMOU307-10	Furnace	Wipe	****	0.111	5.40	ug/ft²	32	ug/ft²	
0408564	SVMOU307-11	Furnace	Wipe	****	0.111	2.70	ug/ft²	18	ug/ft²	
0408565	SVMOU307-12	Furnace	Wipe Blank	****	N/A	0.30	ug	0.35	ug	
0408566	SVMOU307-13	Furnace	Wipe	****	0.111	33.75	ug/ft²	210	ug/ft²	
0408567	SVMOU307-14	Flame	Wipe	****	0.111	108.01	ug/ft²	820	ug/ft²	
0408568	SVMOU307-15	Furnace	Wipe	****	0.111	2.70	ug/ft²	26	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] (b) (6)

Technical Manager: [redacted] (b) (6)

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:**	WVMOU307	**Chain Of Custody:**	121268
Address:	301-lH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Moundsville, WV	**Date Analyzed:**	12/29/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted] (b) (6)
		P.O. Number:	1103	**Report Date:**	29-Dec-03
Attention:	[redacted] (b) (6)				

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
0413634	WVMOU307-16	Furnace	Wipe	****	0.111	2.70	ug/ft²	6.7	ug/ft²	
0413635	WVMOU307-17	Furnace	Wipe	****	0.111	67.51	ug/ft²	91	ug/ft²	
0413636	WVMOU307-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413637	WVMOU307-19	Furnace	Wipe	****	0.111	6.75	ug/ft²	32	ug/ft²	
0413638	WVMOU307-20	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.5	ug/ft²	
0413639	WVMOU307-21	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.8	ug/ft²	
0413640	WVMOU307-22	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.4	ug/ft²	
0413641	WVMOU307-23	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.9	ug/ft²	
0413642	WVMOU307-24	Furnace	Wipe Blank	****	N/A	0.30	ug	1.1	ug	
0413643	WVMOU307-25	Furnace	Wipe	****	0.111	2.70	ug/ft²	15	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] (b) (6)

Technical Manager: [redacted] (b) (6)

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

DATA CHEM LABORATORIES, INC.

Submitted To: (b) (6)
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

(b) (6)
Analyst

(b) (6)
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

(b) (6) [redacted]
Analyst

(b) (6) [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

(b) (6) [redacted]
Analyst

(b) (6) [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

(b) (6) [redacted]
Analyst

(b) (6) [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Moundsville
Date: 11/3/2003

Sample 1

Sample Number: WVMOU307-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.504	2.457
	2.497	2.471
	2.498	2.472
	2.498	2.459
Average	**2.499**	**2.465**

Average Pre and Post **2.4820**

Time 1	8:32
Time 2	10:33
Total Time Sampled	2:01
Minutes Sampled	121.00

Volume **300.32 Liters**

Sample 2

Sample Number: WVMOU307-A2
Pump: 657615

	Pre Flow Rate	Post Flow Rate
	2.537	2.489
	2.526	2.492
	2.53	2.48
	2.523	2.49
Average	**2.529**	**2.488**

Average Pre and Post **2.5084**

Time 1	8:35
Time 2	10:33
Total Time Sampled	1:58
Minutes Sampled	118.00

Volume **295.99 Liters**

WVMOU307

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:

(b) (6) [redacted]

Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	WVKIN312-B1 through WVFAI303-BI
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-5546
DCL Sample ID No.:	03-33112 through 03-33132
Sample Receipt Date:	11/12/03
Analysis Date:	11/13/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

(b) (6) [redacted]
Analyst

(b) (6) [redacted]
Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
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NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVKIN312-B1	WVBUC301-B1	WVBUC301-B1	WVPHR308-B1	WVSAL303-B1
DCL Sample ID:	03-33112	03-33118A	03-33118B	03-33122	03-33123
Macroscopic Examination					
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Layered	Layered	Homog.	Layered Inseparable
Color:	Grey	Green	Black	Grey	Red/Black
Texture:	Crmby/Fbrs	Compact	Resinous	Fbrs/Crmby	Cmpt/Resns
Description:	Material	Tile	Mastic	Material	Tile/Mastic
Analysis:	PLM	PLM	PLM	PLM	PLM
Asbestiform Minerals					
% Chrysotile:	>20≤30	>1≤3	>3≤5	>10≤20	>1≤3
% Amosite:					
% Crocidolite:					
% Tremolite - Actinolite:					
% Anthophyllite:					
% Total Asbestos:	**>20≤30**	**>1≤3**	**>3≤5**	**>10≤20**	**>1≤3**
Other Materials					
% Cellulose:			>1≤3		
% Fiberglass:				>40≤50	
% Other Fibers:					
% Resin/Binder:		>10≤20	>70≤80		>20≤30
% Non Fibrous:	>60≤70	>70≤80	>10≤20	>20≤30	>60≤70

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

(b) (6) [redacted]

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVMOU307-B1	WVMOR304-B1	WVSPE310-B1	WVFAI303-B1
DCL Sample ID:	03-33126	03-33127	03-33128	03-33132
Macroscopic Examination				
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Homog.	Homog.	Homog.
Color:	Brown	Grey	Grey	Grey
Texture:	Compact	Crmby/Fbrs	Crmby/Fbrs	Fbrs/Crmby
Description:	Tile	Material	Material	Material
Analysis:	PLM	PLM	PLM	PLM
Asbestiform Minerals				
% Chrysotile:	>1≤3	>20≤30	Trace	>50≤60
% Amosite:				
% Crocidolite:				
% Tremolite - Actinolite:				
% Anthophyllite:				
% Total Asbestos:	**>1≤3**	**>20≤30**	**Trace**	**>50≤60**
Other Materials				
% Cellulose:				
% Fiberglass:			>30≤40	
% Other Fibers:				
% Resin/Binder:	>10≤20			
% Non Fibrous:	>70≤80	>60≤70	>50≤60	>30≤40

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

(b) (6) [redacted]

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Moundsville Readiness Center
1501 9th Street
Moundsville, West Virginia 26041

AECOM
December 2012
Document No.: 60275401/Moundsville Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Moundsville Readiness Center
1501 9th Street
Moundsville, West Virginia 26041

(b) (6)
Industrial Hygienist

(b) (6)
Project Manager

(b) (6)
Northeast District Health & Safety Manager

AECOM Environment
December 2012
Document No.: 60275401/Moundsville Readiness Center

Contents

List of Appendices

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Executive Summary

On October 15, 2012, AECOM Technical Services Northeast, Inc. (AECOM) conducted an Industrial Hygiene (IH) survey of the Moundsville Readiness Center facility located 1501 9th Street in Moundsville, West Virginia. SSG (b) (6) was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Moundsville Readiness Center operations.

The industrial hygiene survey was conducted in general accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Moundsville Readiness Center is currently staffed by five personnel. The facility is configured as an administrative area and a drill hall. The west side of the drill hall is currently used for storage, but was previously used as a firing range.

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

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

The Moundsville Readiness Center is housed in a single story masonry building constructed in 1959.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

No damaged suspect asbestos containing materials were observed during the evaluation. Site personnel indicated that there was a full scale abatement project at the facility starting in December 2011 and completed in January 2012.

No peeling paint was observed in the facility during the survey.

No evidence of water intrusion was observed during the survey.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a boiler room and three rooftop air handling units that provide fresh air to occupied spaces.

1.0 Facility Description and Operations

The Moundsville Readiness Center is located in a single story slab on grade building constructed circa 1959. The drill hall is surrounded on the east, north and west sides by administrative areas, with a former firing range located on the west side of the drill hall. Most areas are finished block walls; acoustical drop ceilings, and floor tile.

The range was renovated into storage space at some point prior to the survey.

The primary activity at the Moundsville Readiness Center is routine administrative duties. The Moundsville Readiness Center is currently staffed by approximately five personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall, administrative areas, and in association with the firing range following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost Wipes. Very little dust was observed outside of the range.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
MV-01	Drill Hall Floor - East	<110 ug/ft^2
MV-02	Drill Hall Floor – West (just outside former range)	<110 ug/ft^2
MV-03	Drill Hall West side– On top of stored box	<110 ug/ft^2
MV-04	Kitchen – Counter	<110 ug/ft^2
MV-05	Office 12 – Supply Grille	<110 ug/ft^2
MV-06	Office 12 – Desktop	<110 ug/ft^2
MV-07	Break Room - Vent	<110 ug/ft^2
MV-08	Former Range Overhead Heater	21,000 ug/ft^2
MV-09	Former Range Stored Item	290 ug/ft^2
MV-10	Former Range Floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Wipe samples collected in association with most administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 CFR 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of HUD's acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. Lead in excess of the action level of 200 micrograms per square foot (ug/ft^2) per NG-PAM 420-15 was detected in most wipe samples collected in association with the range. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per (b) (6) of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. AECOM did not observe peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos-containing materials (ACM) in readily accessible areas of the Moundsville Readiness Center during this survey.

Typical miscellaneous suspect building materials observed throughout the building but not sampled include floor tiles and associated mastic, drywall, cove base and associated mastic, and ceiling tiles.

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion or suspected mold growth during this survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section contains general office space. The administration section is generally utilized by all of the Moundsville Readiness Center staff members. No Indoor Air Quality concerns were noted by the Moundsville Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. All readings were within acceptable guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Outside - Baseline	0.9	419	67.8	43.9
Office 12	0.7	572	74.0	47.8
Break Room	1.7	571	72.7	50.4
Readiness Office	0.6	772	74.0	51.8

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

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

No potential for contamination of clean air sources was observed at the facility.

AECOM did not observe any obvious indications of maintenance issues with the general ventilation system from readily accessible areas. Percentage of outside air supplied by the HVAC system was calculated using CO_2 levels, and was determined to be approximately 41%, using the ASHRAE formula $\%OA=((C_{RA}-C_{SA})/(C_{RA}-C_{OA}))X100$, where C_{RA}=546 ppm CO_2, C_{SA}=494 ppm CO_2, and C_{OA}=419 ppm CO_2. Based on the carbon dioxide levels observed inside the building during this assessment, there is appears to be a sufficient quantity of outside air being delivered via the HVAC system in order to satisfy the occupant load.

Very little dust was observed at diffusers, and site personnel indicated that the system seems to work well. Temperature readings were constant in all areas occupied by readiness center personnel.

4.1.2 HVAC Maintenance

Maintenance is reportedly performed on the HVAC system bi-annually. Site personnel indicated that one of the rooftop units is leaking and should be replaced. Very little dust was observed on supply grilles in the facility.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in all areas.

Table 5-1: Light Survey

Location	Results (Foot candles)	Met Standard (Y/N)	Standard*
Fitness Room	71.0	Y	30
Classroom	89.6	Y	30
Corridor	64.6	Y	5
Kitchen	62.5	Y	50
Office 12	91.3	Y	50
Break Room	50.5	Y	10
Readiness Office	104.8	Y	50
Men's Room	62.6	Y	5
Supply	88.5	Y	30
Drill Hall	56.2	Y	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI/IESNA RP-7-01)			

6.0 Evaluation of Attached Garage

There is no garage associated with the Moundsville Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Moundsville Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

No damaged suspect asbestos containing materials were observed during the evaluation. Site personnel indicated that there was a full scale abatement project at the facility starting in December 2011 and completed in January 2012.

No peeling paint was observed in the facility during the survey.

No evidence of water intrusion was observed during the survey.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a boiler room and three rooftop air handling units that provide fresh air to occupied spaces.

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

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

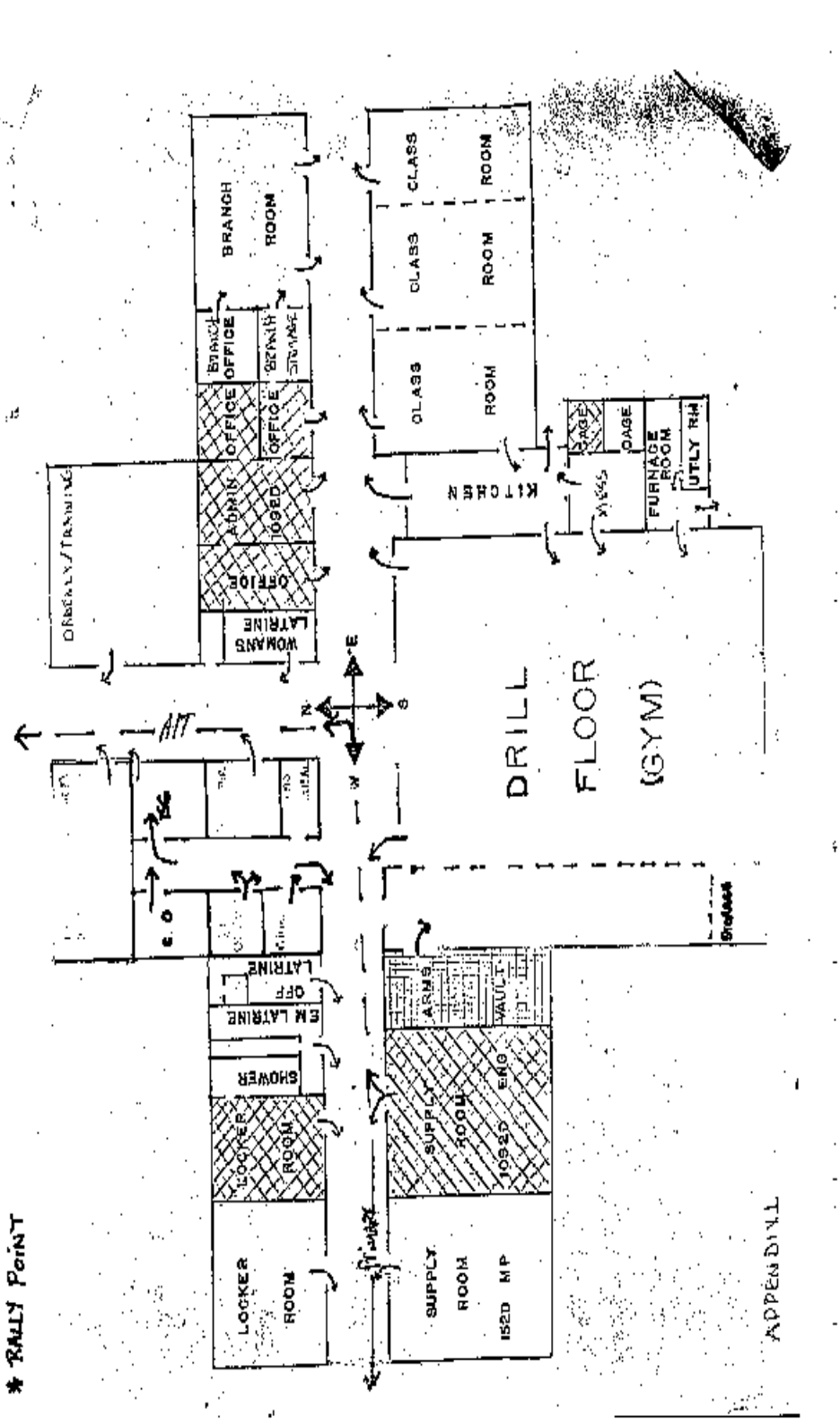
The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may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

or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during AECOM's inspection of the site.

Appendix A

Moundsville Readiness Center Facility Layout

AECOM



Appendix B

Moundsville Readiness Center Photographs

AECOM

Photograph 1

Building Exterior

Photograph 2

Boiler Room

AECOM

Photograph 3

Drill Hall Heating

Photograph 4

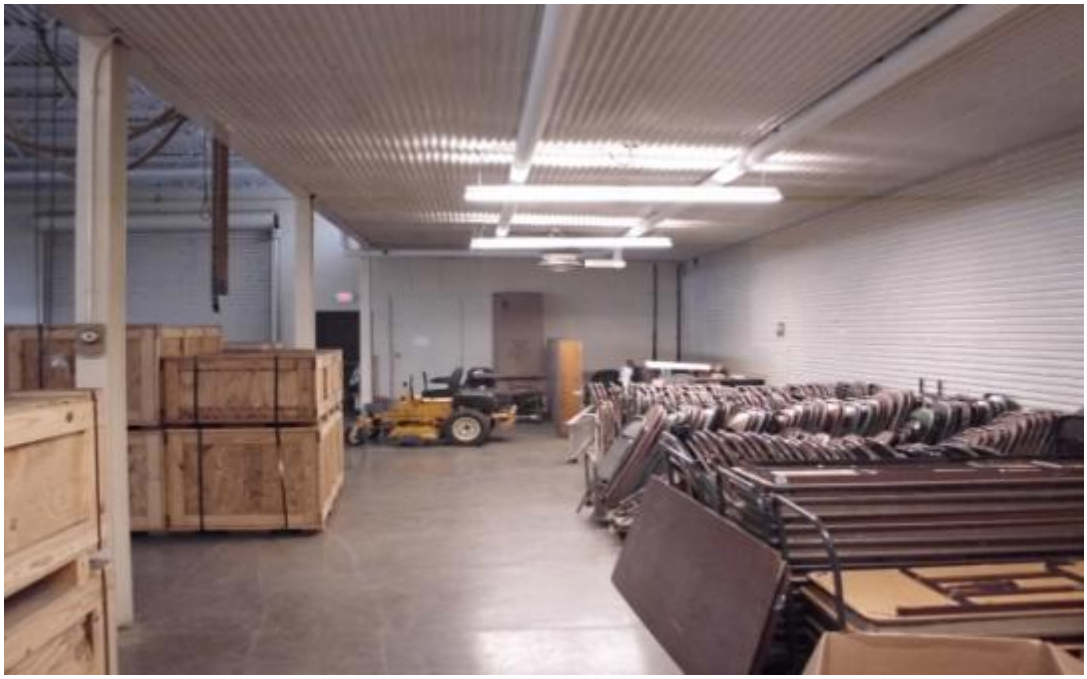
Drill Hall

AECOM

Photograph 5

Former Range

Photograph 6



Former Range #2

AECOM

Photograph 7
 Lobby

Photograph 8
 MSDS area and typical fiberglass pipe insulation

Appendix C

Analytical Results

AECOM

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:	Moundsville RC	Chain Of Custody:	514260		
Address:	301-IH Old Bay Lane, Attn: ARNG-CIG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13008277	MV-01	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008278	MV-02	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008279	MV-03	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008280	MV-04	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008281	MV-05	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008282	MV-06	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008283	MV-07	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008284	MV-08	Flame	Wipe	****	0.111	110	ug/ft²	2400	21000	ug/ft²	
13008285	MV-09	Flame	Wipe	****	0.111	110	ug/ft²	32	290	ug/ft²	
13008286	MV-10	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

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CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Moundsville RC	Chain Of Custody:	514260		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/30/2012

Attention: Non-R i

Summary of Atomic Absorption Analysis for Lead

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

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Anal Non-Responsive

Technical Manager: Non-Responsive

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514260

Mailing/Billing Information:

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

Submittal Information:

(1.) Job Name: Moundsville RC
(2.) Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ [redacted]
5. Submitted by: AECOM (Signature): Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and Emailing to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive .aecom.com
Comments:	☐ 2 Day (Date Due): 10/30/12	☐ Fax: Non-Responsive us.army.mil
		☐ Verbals: us.army.mil

Asbestos Analysis

*TCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 _____(QTY)
☐ Fiberglass _____(QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA _____(QTY)
☐ NIOSH 7402 _____(QTY)
☐ Other (specify_____) _____(QTY)

PLM Bulk
☐ EPA 600 – Visual Estimate _____(QTY)
☐ EPA Point Count _____(QTY)
☐ NY State Friable 198.1 _____(QTY)
☐ Grav. Reduction ELAP 198.6 _____(QTY)
☐ Other (specify_____) _____(QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield _____(QTY)
☐ NY State PLM/TEM _____(QTY)
☐ Residual Ash _____(QTY)

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

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

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

Metals Analysis
☐ Pb Paint Chip _____(QTY)
☒ *Pb Dust Wipe (wipe type: ghost) 10 (QTY)
☐ *Pb Air _____(QTY)
☐ Pb Soil/Solid _____(QTY)
☐ Pb TCLP _____(QTY)
☐ Drinking Water ☐ Pb____(QTY) ☐ Cu____(QTY) ☐ As____(QTY)
☐ Waste Water ☐ Pb____(QTY) ☐ Cu____(QTY) ☐ As____(QTY)
☐ Pb Furnace (Media _____) _____(QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
☐ *Spore-Trap____(QTY) ☐ Surface Vacuum Dust____(QTY)
☐ *Surface Swab____(QTY) ☐ Culturable ID Genus (Media____)____(QTY)
☐ *Surface Tape____(QTY) ☐ Culturable ID Species (Media____)____(QTY)
☐ Other (Specify____)____(QTY)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	TISSUE SWAB	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 10/23/12 @ (CT) Via: [illegible] By (Print): Non-Responsive Sign: [redacted]
2. Date/Time Analyzed: ___/___/___ @ ___ By (Print): ___ Sign: ___
3. Results Reported To: ___ Via: ___ Date: ___/___/___ Time: ___ Initials: ___
4. Comments: ___

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/15/12
Job Number: 60275401
Contact Person: Non-Responsive

Job Name: Moundsville RC
Job Location: West Virginia
Address: 1501 9th St.
Moundsville, WV

Company: AECOM
Phone Number: 315 432 0506
Collected By: Non-Responsive
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
MV-01	Assembly Hall - EAST	Floor	16"	Gauze
MV-02	" " - WEST	Floor	"	"
MV-03	" " - NEST	Stored Item	"	"
MV-04	Kitchen	counter	"	"
MV-05	OFFICE 12	Supply Grille	"	"
MV-06	OFFICE 12	DESKTOP	"	"
MV-07	Break Rm	vent	"	"
MV-08	Former RANGE	overhead Heater	"	"
MV-09	" "	Stored Item	"	"
MV-10	" "	Floor	"	"

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

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Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Oak Hill Readiness Center – Oak Hill, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

National Guard Armory
Oak Hill Readiness Center – Oak Hill, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

Prepared by: Non-Responsive _____

Industrial Hygienist

Reviewed by: Non-Responsive _____

Business Line Manager

Table of Contents

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List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Oak Hill Readiness Center in Oak Hill, West Virginia. Non-Responsive performed the evaluation on 17 November 2003. The point of contact at the readiness center was SSG Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs

- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Materials (pipe insulation for elbows and joints) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Indoor air quality measurements for temperature revealed a level that s exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in all of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level in one area. This area must be decontaminated by a thorough cleaning until surface lead concentration is reduced to below recommended levels. In addition, stored items should be wet-wiped before being removed from the area.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Oak Hill Readiness Center in Oak Hill, West Virginia. [redacted] performed the evaluation on 17 November 2003. The point of contact at the readiness center was SGT [redacted]

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary. Since the results revealed non-detectable levels of lead on the drill floor, the other wipe samples were not submitted for analysis.

However, wipe sampling for lead revealed a concentration above a level of 40 $\mu g/ft^2$ in the converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (personnel office and gym/former converted bullet trap). The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory on a pipe above the personnel office door (approximately 10.75 feet). The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that the lead concentration at the location was below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing material was pipe insulation in pipe joints/elbows in the drill hall (approximately thirteen elbows/joints). It can be assumed that suspected asbestos containing pipe insulation is present in the remaining pipe joints and elbows throughout the facility. The condition of the insulation material was considered good (no rips, tears, or other damage).

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed no visible mold; however, there was

water damage on the ceilings in the boiler room, maintenance room, and drill hall room.

The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interviews with employees and measurements for carbon dioxide and humidity revealed no indoor air quality concerns at the armory. However, measurements for temperature revealed a level that exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)

- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in all areas, including the personnel office, middle office, recruiter's office, classroom 1, maintenance room (office), and men's latrine.

Consideration should be given to providing more lighting to these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The bullet

trap is the only remnant of the former firing range; the former firing range consisted of a portion of the drill hall floor and the bullet trap. The bullet trap space was converted into a storage room. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor at less than 2.7 micrograms lead per square foot ($\mu g/ft^2$);
- stored item (cabinet top surface) at 50 $\mu g/ft^2$; and
- light fixture at 270 $\mu g/ft^2$.

The lead level at one of these locations was above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). This area must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below the recommended level. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, stored items should be wet-wiped before being removed from the area.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, housekeeping, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Oak Hill, West Virginia
Date of Sampling: 17 November 2003

Sample Number	Location	Results,µg/ft² [a]
WVOAK321-1	Assembly room - filing cabinet top surface (See Building Layout - Appendix B)	16
WVOAK321-2	Assembly room - flammable cabinet top surface (See Building Layout - Appendix B)	< 2.7
WVOAK321-3	Assembly room – filing cabinet top surface (See Building Layout - Appendix B)	12
WVOAK321-4	Assembly room – electrical box top surface (See Building Layout - Appendix B)	2.7
WVOAK321-5	Assembly room – table top (See Building Layout Appendix B)	< 2.7
WVOAK321-6	Field Blank	< 0.31 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Oak Hill, West Virginia
Date of Sampling: 17 November 2003

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVOAK321-A1	Personnel Office	1247-1416/89	2.5695	228.69	<0.004
WVOAK321-A2	Gym (former bullet trap)	1247-1416/89	2.5319	225.34	<0.004
WVOAK321-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Oak Hill, West Virginia
Date of Sampling: 17 November 2003

Sample Number	Location	Results, % By Weight
WVOAK321-PC1	Pipe (above Personnel Office)	0.048

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Oak Hill, West Virginia
Date of Sampling: 17 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor – Dining Room (Classroom 2)	1	698	32.3	82.0
Outdoors	-	501	51.6	62.6

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Oak Hill, West Virginia

Date of Sampling: 17 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Personnel Office (Admin office adjacent to lobby)	41.3-67.2	70	No
Middle Office (Admin)	48.3-66.5	70	No
Recruiter's Office	45.1-68.2	70	No
Classroom 1	25.7-45.3	70	No
Maintenance Room (Office)	19.2-38.7	70	No
Men's Latrine	6.9-13.8	40	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Oak Hill, West Virginia

Date of Sampling: 17 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVOAK321-7	Floor	< 2.7
WVOAK321-8	Stored Item - - shelf	50
WVOAK321-9	Light Fixtures	270

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Oak Hill Armory West Virginia ARNG	Oak Hill

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
17 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SSG

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 469 6411	1863 Transportation Unit	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	72	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
PVDTKXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
7439-92-1	Lead, Inorganic dust and fumes as Pb	3-low	C-Uncontrolled Respiratory
1332-21-4	Asbestos (other)	2-moderate	C-Uncontrolled Respiratory
PO HEAT STR	Heat Stress	3-low	C Uncontrolled Physical

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive		E	M	NOT AVAILABLE	MIL
		A			
					CIV

SECTION 6. COMMENTS

No comments See attached sheet

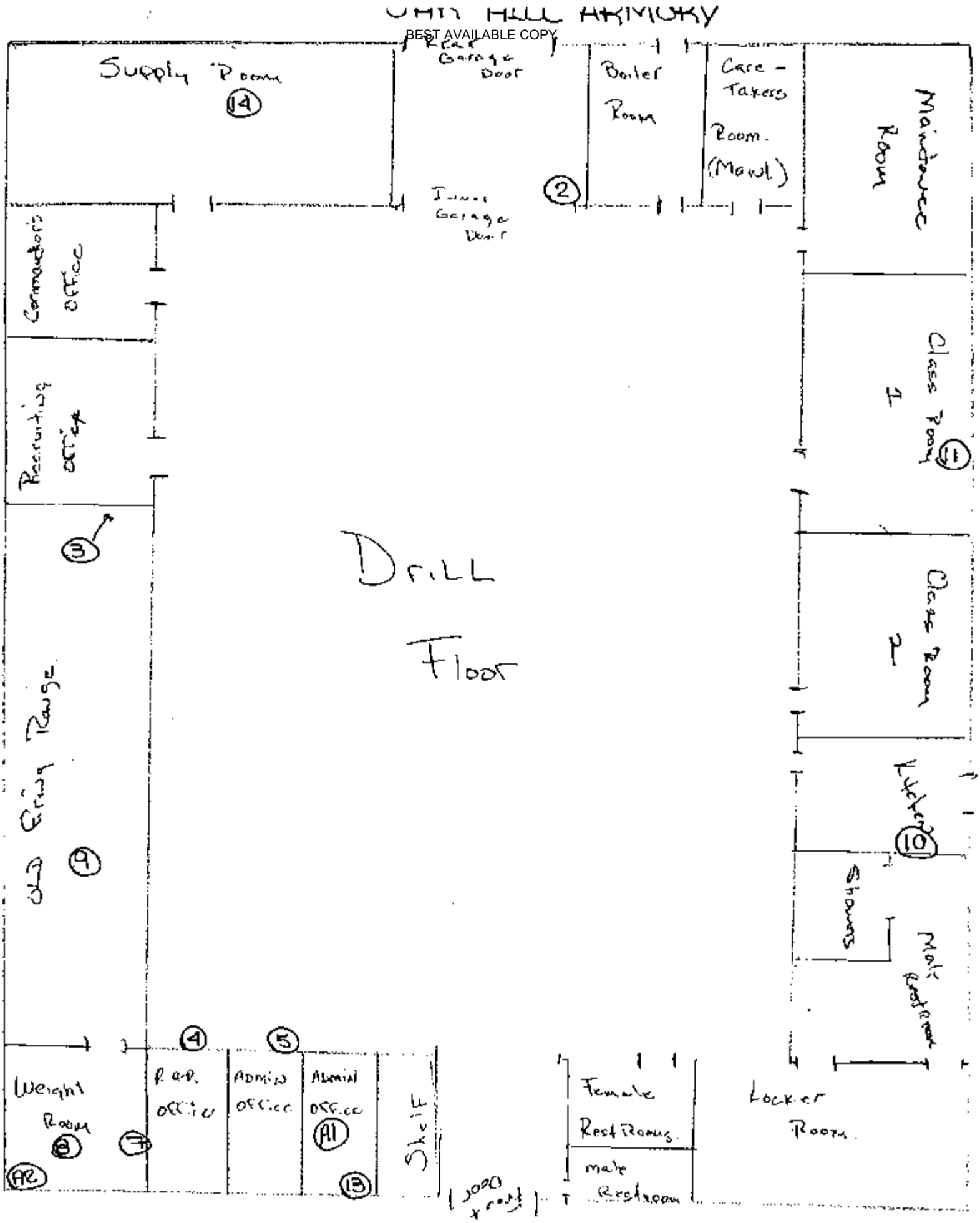
Survey conducted by Non-Responsive. Building contains 2 Military personnel full-time and 1 civilian caretaker. Military personnel perform primarily administrative functions

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Oak Hill	**Chain Of Custody:**	119402
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	12/02/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	02-Dec-03
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
0411056	WVOAK321-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	16	ug/ft²	
0411057	WVOAK321-2	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0411058	WVOAK321-3	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0411059	WVOAK321-4	Furnace	Wipe	****	0.111	2.70	ug/ft²	2.7	ug/ft²	
0411060	WVOAK321-5	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0411061	WVOAK321-6	Furnace	Wipe Blank	****	N/A	0.30	ug	0.31	ug	
0411062	WVOAK321-7	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0411063	WVOAK321-8	Furnace	Wipe	****	0.111	33.75	ug/ft²	50	ug/ft²	
0411064	WVOAK321-9	Flame	Wipe	****	0.111	108.01	ug/ft²	270	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]

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVOAK321-A1 through VACLI325-A3
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5799
DCL Sample ID No.:	03-34380 through 03-34414
Sample Receipt Date:	11/25/2003
Preparation Date:	12/02/03
Analysis Date:	12/03/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVOAK321-A1	03-34380	228.69	ND	<0.004
WVOAK321-A2	03-34381	225.34	ND	<0.004
WVOAK321-A3	03-34382	0	ND	-
WVBEC321-A1	03-34384	305.03	ND	<0.003
WVBEC321-A2	03-34385	301.29	ND	<0.003
WVBEC321-A3	03-34386	0	ND	-
WVDUN323-A1	03-34387	418.71	ND	<0.002
WVDUN323-A2	03-34388	426.37	ND	<0.002
WVDUN323-A3	03-34389	0	ND	-
WV2CH322-A1	03-34390	330.94	ND	<0.003
WV2CH322-A2	03-34391	324.29	ND	<0.003
WV2CH322-A3	03-34392	0	ND	-
WV1CH322-A1	03-34393	316.36	ND	<0.003
WV1CH322-A2	03-34394	312.78	ND	<0.003
WV1CH322-A3	03-34395	0	ND	-
WVSTA323-A1	03-34396	350.61	ND	<0.003
WVSTA323-A2	03-34397	339.14	ND	<0.003
WVSTA323-A3	03-34398	0	ND	-
WVCHA324-A1	03-34400	162.63	ND	<0.006
WVCHA324-A2	03-34401	172.47	ND	<0.006
	Prep Blank		ND	
% Recovery	LCS 1		109.	
% Recovery	LCS 2		111.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]

Analyst

Non-Responsive [redacted]

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVCHA324-A3	03-34402	0	ND	-
WVALL324-A1	03-34403	222.94	ND	<0.004
WVALL324-A2	03-34404	219.24	ND	<0.005
WVALL324-A3	03-34405	0	ND	-
WVRON325-A1	03-34406	327.48	ND	<0.003
WVRON325-A2	03-34407	322.77	ND	<0.003
WVRON325-A3	03-34408	0	ND	-
VACLI325-A1	03-34412	390.23	ND	<0.003
VACLI325-A2	03-34413	405.99	ND	<0.002
VACLI325-A3	03-34414	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 3		107.	
% Recovery	LCS 4		105.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Oak Hill
Date: 11/17/2003

Sample 1

Sample Number: WVOAK321-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.579	2.532
	2.580	2.568
	2.569	2.577
	2.585	2.566
Average	**2.578**	**2.561**

Average Pre and Post **2.5695**

Time 1	12:47
Time 2	14:16
Total Time Sampled	**1:29**
Minutes Sampled	89.00

Volume **228.69 Liters**

Sample 2

Sample Number: WVOAK321-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.486	2.548
	2.529	2.553
	2.526	2.562
	2.491	2.56
Average	**2.508**	**2.556**

Average Pre and Post **2.5319**

Time 1	12:47
Time 2	14:16
Total Time Sampled	**1:29**
Minutes Sampled	89.00

Volume **225.34 Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVOAK321-PC1 through WVRON325-PC2
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5799
DCL Sample ID No.:	03-34383 through 03-34410
Sample Receipt Date:	11/25/2003
Preparation Date:	12/1/2003
Analysis Date:	12/1/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVOAK321-PC1	03-34383	480.	0.048
WVRON325-PC1	03-34409	120.	0.012
WVRON325-PC2	03-34410	460.	0.046
	Prep Blank	ND	
% Recovery	LCS	87.	
% Recovery	34307MS	NA	
% Recovery	34307MSD	NA	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.
NA indicates the sample result was greater than four times the spiked amount.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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Shaw Environmental, Inc.

National Guard Armory
Parkersburg Readiness Center – Parkersburg, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

National Guard Armory
Parkersburg Readiness Center – Parkersburg, West Virginia

Industrial Hygiene Evaluation

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Parkersburg Readiness Center in Parkersburg, West Virginia Non-Responsiv Non-Responsi performed the evaluation on 04 November 2003. The point of contact at the readiness center was acting caretake Non-Responsive The military unit was deployed at the date of the survey. However, there is family support staff on site, as well as replacement military staff.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Indoor Air Quality

- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that this surface and the areas immediately around this surface be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly room, HHC TNG office, S-1, recruiting/retention office, men's locker room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. Sampling revealed that the pipe insulation did contain asbestos. The area where the pipe insulation was damaged (pipe joint in the enlisted men's locker room) should be repaired. In addition, an operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey and no military personnel/employees who normally work at the armory were present to interview.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Parkersburg Readiness Center in Parkersburg, West Virginia. Non-Responsi performed the evaluation on 04 November 2003. The point of contact at the readiness center was acting caretaker Non-Responsive The military unit was deployed at the date of the survey. However, there is family support staff on site, as well as replacement military staff.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at one location. One sample collected from the assembly hall (podium bottom shelf surface) had a lead concentration of 350 $\mu g/ft^2$. It is recommended that this surface and the immediate area around this surface be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly room, HHC TNG office, S-1 office, recruiting/retention office, men's

locker room, and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at the BN S-2 office (Room #4) and HHC TNG office (Room #1). The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles and pipe insulation. The floor tiles were observed in the S-1 office, hallways throughout the building, administrative office, recruiting/retention office, BN S-2 office, BN S-3 office, HHC commander office, conference rooms 1 and 2, foyers to the ladies' and officer's latrines, kitchen, HHC CDR 1SG office, medical room, and BN S-4 office (approximately 7897 square feet). The condition of the floor tiles was considered good in most locations, although some damage was seen at doorstops, such as at Room #8 (BN S-4 Office). Please note that no pieces of floor tile were available for bulk sampling. The pipe insulation was observed in the drill hall on pipe elbows/joints (approximately 37 pipe joints/elbows). It could also be assumed that the suspected asbestos containing insulation remains in the pipe joints/elbows

throughout the facility. The condition of the insulation materials was considered good (no rips, tears, or other damage) in most locations with the exception of the insulation on a pipe joint in the enlisted men's locker room. A bulk sample was collected at this location and the results revealed asbestos in the form of chrysotile at 10-20 % in the gray fibrous/crumbly material.

The exposed asbestos containing insulation material on the pipe joint in the enlisted men's locker room should be repaired. An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. No mold was observed, however, the inspection revealed water damage in the form of stained ceiling tiles in the main hallway and as stained ceiling in the drill hall.

The source of the water damage was likely from roof leaks. Please note that the roof is scheduled to be replaced. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey and no military personnel/employees who normally work at the armory were present to interview.

2.3.2 Indoor Air Quality

Interview with the acting caretaker and measurements for carbon dioxide, temperature and humidity revealed no indoor air quality concerns at the armory. The

results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 5. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the S-1 office, BN S-3

office, HHC TNG office, individual learning center (classroom), ladies latrine, and kitchen. Consideration should be given to providing more lighting to these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The room was converted into a storage room. The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- floor at 96 micrograms lead per square foot ($\mu g/ft^2$); and
- stored item (shelf surface) at 140 $\mu g/ft^2$.

Note that a sample was not taken the bullet trap area because it was inaccessible. This area is inside a locked room, and the caretaker could not find the key to unlock the door.

The lead levels at these locations were below the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army); therefore, no actions are necessary.

2.9. HVAC System

The maintenance schedule for the HVAC system was evaluated to verify that maintenance occurs on a regular basis. Also, the condition of the HVAC system was evaluated to determine if the maintenance performed is effective. It was deemed that maintenance occurs on a regular basis, and the maintenance performed is effective.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, housekeeping, indoor air quality, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing materials, water damage, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey and no military personnel/employees who normally work at the armory were present to interview.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Parkersburg, West Virginia
Date of Sampling: 04 November 2003

Sample Number	Location	Results, µg/ft² [a]
WVPAR308-7	Assembly room – table top (See Building Layout – Appendix B)	3.5
WVPAR308-8	Assembly room – podium bottom shelf surface (See Building Layout – Appendix B)	350
WVPAR308-9	Assembly room – soda machine top surface (See Building Layout – Appendix B)	17
WVPAR308-10	Assembly room – table, bottom shelf (See Building Layout – Appendix B)	11
WVPAR308-11	Assembly room – electrical control box top surface (See Building Layout – Appendix B)	110
WVPAR308-12	Field Blank	< 0.3 µg
WVPAR308-17	Day Room – television top surface	4.3
WVPAR308-18	Field Blank	< 0.3 µg
WVPAR308-19	Kitchen – counter surface	2.7
WVPAR308-20	Conference room #1 – heater vent top surface	18
WVPAR308-21	Lobby – heater vent top surface	21
WVPAR308-22	HHC Tng Office – shelf	91
WVPAR308-23	Bn S-2 Office – stereo shelf top surface	2.9
WVPAR308-24	Field Blank	< 0.3 µg
WVPAR308-25	S-1 Office – inlet air grille	170
WVPAR308-26	Recruiting/Retention Office – supply air grille	42
WVPAR308-27	Medical Room – table top	5.3
WVPAR308-28	Men's Locker room – locker #86 top surface	110

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Parkersburg, West Virginia
Date of Sampling: 04 November 2003

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVPAR308-A1	Bn S-2 Office	0815-1025/130	2.5206	327.68	<0.003
WVPAR308-A2	HHC Tng Office	0817-1023/126	2.4816	312.68	<0.003
WVPAR308-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Parkersburg, West Virginia
Date of Sampling: 04 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor – Lobby	1	672	42.9	72.7
Outdoors	-	513	58.8	65.8

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Parkersburg, West Virginia

Date of Sampling: 04 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
S-1 Office	20.1-38.6	70	No
BN S-3 Office	24.3-59.7	70	No
HHC TNG Office	27.2-43.6	70	No
Hallway (lobby)	16.2-26.3	7.5	Yes
Individual Learning Center (classroom)	20.1-42.9	70	No
Ladies Latrine	2.94-29.1	40	No
Kitchen	6.9-53.6	70	No
Day Room	2.0-95.1	70	Some areas*

[a] fc - Footcandles

* Additional lighting provided above one area (not representative of the entire space) was 95.1 foot candles; the predominant luminance range was 2.0-11.3 foot candles.

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Parkersburg, West Virginia

Date of Sampling: 04 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVPAR308-13	Floor	96
WVPAR308-14	Stored Items – shelf surface	140

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Parkersburg Armory West Virginia ARNG	Parkersburg

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
04 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	NOT AVAILABLE

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 485 7401	HHC 1092D ECB (C)	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
5*	3*	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D-Uncontrolle Physical
7439-92-1	Lead, Inorganic dusts & Fumes, as Pb	2-moderate	C-Uncontrolle Respiratory
1332-21-4	Asbestos (other)	2-moderate	↓
12001-29-5	Asbestos (Chrysotile)	2-moderate	↓

SECTION 5. PERSONNEL DATA

* full time military staff deployed, during deployment replacement staff and family assistance center are located at the armory.

LAST NAME	FIRST NAME	MI	SEX	SSN	military CATEGORY
Non-Responsive			M	NOT AVAILABLE	MIL
			↓	↓	↓
			↓	↓	↓
		R	↓	↓	CIV
			↓	↓	CIV** retir MIL
			F	↓	CIV
			↓	↓	↓
			↓	↓	↓

SECTION 6. COMMENTS

___No comments ___See attached sheet

Non-Responsive conducted survey. Fulltime military employees and caretaks deployed. Personnel data above represents replacement military caretak and family assistance center staff. All employees perform mainly administrative functions.

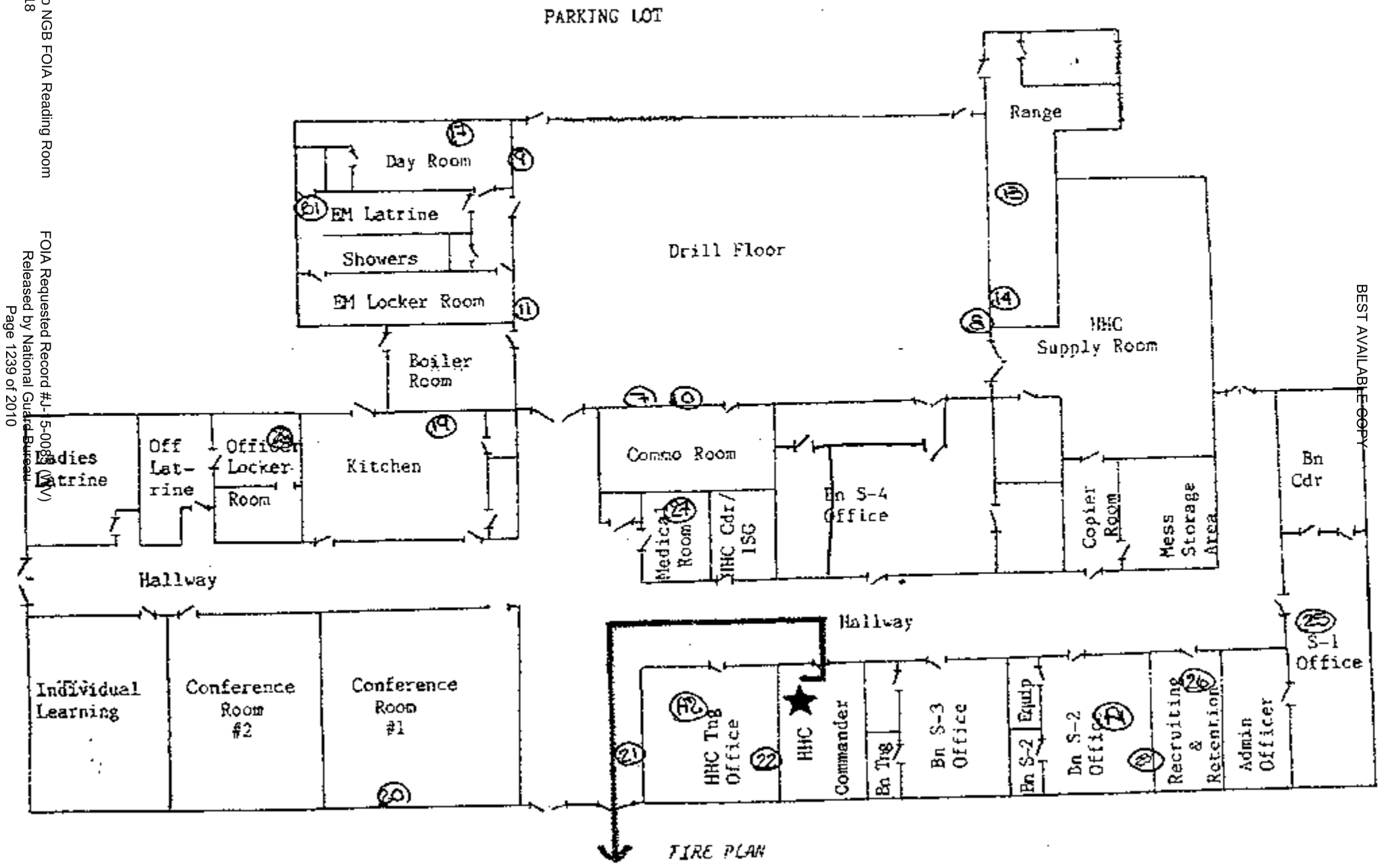
PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout

PARKERSBURG (SIMS) ARMORY
TIRE PLAN



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Parksburg	**Chain Of Custody:**	119255
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/18/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	18-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0408513	WVPAR308-7	Furnace	Wipe	****	0.111	2.70	ug/ft²	3.5	ug/ft²	
0408514	WVPAR308-8	Furnace	Wipe	****	0.111	67.51	ug/ft²	350	ug/ft²	
0408515	WVPAR308-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	17	ug/ft²	
0408516	WVPAR308-10	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	ug/ft²	
0408517	WVPAR308-11	Furnace	Wipe	****	0.111	67.51	ug/ft²	110	ug/ft²	
0408518	WVPAR308-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408519	WVPAR308-13	Furnace	Wipe	****	0.111	27.00	ug/ft²	96	ug/ft²	
0408520	WVPAR308-14	Furnace	Wipe	****	0.111	27.00	ug/ft²	140	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.

Analys[redacted] Non-Responsive echnical Manager: Non-Responsive

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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:**	WVPAR308	**Chain Of Custody:**	121301
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Parkensburg	**Date Analyzed:**	12/30/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	30-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413702	WVPAR308-19	Furnace	Wipe	****	0.111	2.70	ug/ft²	2.7	ug/ft²	
0413703	WVPAR308-20	Furnace	Wipe	****	0.111	2.70	ug/ft²	18	ug/ft²	
0413704	WVPAR308-21	Furnace	Wipe	****	0.111	2.70	ug/ft²	21	ug/ft²	
0413705	WVPAR308-22	Furnace	Wipe	****	0.111	2.70	ug/ft²	91	ug/ft²	
0413706	WVPAR308-23	Furnace	Wipe	****	0.111	2.70	ug/ft²	2.9	ug/ft²	
0413707	WVPAR308-24	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413708	WVPAR308-25	Furnace	Wipe	****	0.111	67.51	ug/ft²	170	ug/ft²	
0413709	WVPAR308-26	Furnace	Wipe	****	0.111	6.75	ug/ft²	42	ug/ft²	
0413710	WVPAR308-27	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.3	ug/ft²	
0413711	WVPAR308-28	Furnace	Wipe	****	0.111	33.75	ug/ft²	110	ug/ft²	
0413712	WVPAR308-17	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.3	ug/ft²	
0413713	WVPAR308-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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: Non-Responsive Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

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WEST COAST OFFICE
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NOVATO, CALIFORNIA 94945
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Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Parkersburg
Date: 11/4/2003

Sample 1

Sample Number: WVPAR308-A1
Pump: 657615

	Pre Flow Rate	Post Flow Rate
	2.514	2.513
	2.523	2.523
	2.521	2.526
	2.528	2.517
Average	**2.522**	**2.520**

Average Pre and Post 2.5206

Time 1 8:15
Time 2 10:25
Total Time Sampled 2:10
Minutes Sampled 130.00

Volume 327.68 Liters

Sample 2

Sample Number: WVPAR308-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.504	2.464
	2.499	2.46
	2.504	2.457
	2.49	2.475
Average	**2.499**	**2.464**

Average Pre and Post 2.4816

Time 1 8:17
Time 2 10:23
Total Time Sampled 2:06
Minutes Sampled 126.00

Volume 312.68 Liters

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:
Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	WVKIN312-B1 through WVFAI303-BI
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-5546
DCL Sample ID No.:	03-33112 through 03-33132
Sample Receipt Date:	11/12/03
Analysis Date:	11/13/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive
Analyst

Non-Responsive
Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

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NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVKIN312-B1	WVBUC301-B1	WVBUC301-B1	WVPHR308-B1	WVSAL303-B1
DCL Sample ID:	03-33112	03-33118A	03-33118B	03-33122	03-33123
Macroscopic Examination					
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Layered	Layered	Homog.	Layered Inseparable
Color:	Grey	Green	Black	Grey	Red/Black
Texture:	Crmby/Fbrs	Compact	Resinous	Fbrs/Crmby	Cmpt/Resns
Description:	Material	Tile	Mastic	Material	Tile/Mastic
Analysis:	PLM	PLM	PLM	PLM	PLM
Asbestiform Minerals					
% Chrysotile:	>20≤30	>1≤3	>3≤5	>10≤20	>1≤3
% Amosite:					
% Crocidolite:					
% Tremolite - Actinolite:					
% Anthophyllite:					
% Total Asbestos:	**>20≤30**	**>1≤3**	**>3≤5**	**>10≤20**	**>1≤3**
Other Materials					
% Cellulose:			>1≤3		
% Fiberglass:				>40≤50	
% Other Fibers:					
% Resin/Binder:		>10≤20	>70≤80		>20≤30
% Non Fibrous:	>60≤70	>70≤80	>10≤20	>20≤30	>60≤70

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVMOU307-B1	WVMOR304-B1	WVSPE310-B1	WVFAI303-B1
DCL Sample ID:	03-33126	03-33127	03-33128	03-33132
Macroscopic Examination				
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Homog.	Homog.	Homog.
Color:	Brown	Grey	Grey	Grey
Texture:	Compact	Crmby/Fbrs	Crmby/Fbrs	Fbrs/Crmby
Description:	Tile	Material	Material	Material
Analysis:	PLM	PLM	PLM	PLM
Asbestiform Minerals				
% Chrysotile:	>1≤3	>20≤30	Trace	>50≤60
% Amosite:				
% Crocidolite:				
% Tremolite - Actinolite:				
% Anthophyllite:				
% Total Asbestos:	**>1≤3**	**>20≤30**	**Trace**	**>50≤60**
Other Materials				
% Cellulose:				
% Fiberglass:			>30≤40	
% Other Fibers:				
% Resin/Binder:	>10≤20			
% Non Fibrous:	>70≤80	>60≤70	>50≤60	>30≤40

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations CFR). Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Parkersburg Readiness Center
1500 Blizzard Drive
Parkersburg, West Virginia 26101

AECOM
December 2012
Document No.: 60275401/Parkersburg Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Parkersburg Readiness Center
1500 Blizzard Drive
Parkersburg, West Virginia 26101

Non-Responsive
[redacted]
Industrial Hygienist

Non-Responsive
[redacted]
Project Manager

Non-Responsive
[redacted]
Northeast District Health & Safety Manager

AECOM Environment
December 2012
Document No.: 60275401/Parkersburg Readiness Center

AECOM

Contents

List of Appendices

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Executive Summary

On October 15, 2012, AECOM Technical Services Northeast, Inc. (AECOM) conducted an Industrial Hygiene (IH) survey of the Parkersburg Readiness Center facility located at 1500 Blizzard Drive in Parkersburg, West Virginia. Maj. Non-R was the point of contact for the facility and MR2 Non-R accompanied AECOM during the survey to provide access and information concerning the Parkersburg Readiness Center operations.

The industrial hygiene survey was conducted in general accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Parkersburg Readiness Center is currently staffed by 20 personnel. The facility is configured as administrative areas and a drill hall. The facility has a basement that was previously configured as a firing range, but was recently completely renovated into office space.

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

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

The Parkersburg Readiness Center is housed in a single story masonry building with a basement, constructed in 1959, with basement renovations in the last few years.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

Approximately 800 linear feet of asbestos containing pipe insulation and 14,000 square feet of asbestos-containing floor tile were observed during the evaluation. The materials are generally in good condition, with the exception of approximately 1 linear foot of pipe insulation above the latrine door adjacent to the drill hall.

Approximately 20 square feet of peeling paint was observed in latrine adjacent to the drill hall and 5 square feet of peeling paint was observed in the boiler room during the survey. Analytical results indicated the presence of quantifiable levels of lead in both paints sampled.

No evidence of water intrusion was observed during the survey.

Primary heating in the building is provided via a boiler room that feeds radiant heaters throughout the main floor, as well as rooftop air handling units that provide fresh air to occupied spaces.

1.0 Facility Description and Operations

The Parkersburg Readiness Center is located in a single story masonry building with a basement constructed in 1959. The drill hall is at the south center side of the facility surrounded by administrative spaces on the east, north and west sides of the drill hall. There was previously a firing range located in the basement of the facility. The range area was completely renovated and converted to office space recently. Interior finishes are typically comprised of painted block walls, drywall; acoustical drop ceilings, and floor tile. Fiberglass and asbestos pipe insulation was observed throughout the facility.

The primary activity at the Parkersburg Readiness Center is routine administrative duties. The Parkersburg Readiness Center is currently staffed by approximately 20 personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall and administrative areas, following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost Wipes.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
PB-01	Drill Hall Floor - North	<110 ug/ft^2
PB-02	Drill Hall Floor – South	<110 ug/ft^2
PB-03	Drill Hall table	<110 ug/ft^2
PB-04	Kitchen – Counter	<110 ug/ft^2
PB-05	Classroom – Supply Grille	<110 ug/ft^2
PB-06	Former Range – Now Office - Desk	<110 ug/ft^2
PB-07	Former Range – Now Office – Top of Microwave	<110 ug/ft^2
PB-08	Former Range – Now Office – Corridor Floor	<110 ug/ft^2
PB-09	Classroom Floor	<110 ug/ft^2
PB-10	Former Range - Now Break Room – Supply Grille	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

None of the wipe samples were found to contain lead in excess of the action level of 200 micrograms per square foot (ug/ft^2) per NG-PAM 420-15. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. AECOM observed 20 square feet of peeling paint in the latrine adjacent to the drill hall, and approximately 5 square feet of peeling paint in the boiler room during this evaluation. Samples of each of the two paints were collected and both were found to contain quantifiable levels of lead. Laboratory analytical results are presented in Appendix C.

3.1.2 Suspect Asbestos Containing Materials

AECOM observed approximately 800 linear feet of asbestos containing pipe insulation and 14,000 square feet of asbestos-containing floor tile in readily accessible areas during the evaluation. The materials are generally in good condition, with the exception of approximately 1 linear foot of pipe insulation above the latrine door adjacent to the drill hall. Site personnel indicated that the facility had a previous asbestos survey and that they were aware of the presence of the asbestos-containing materials at the facility. Additional asbestos-containing pipe insulation may be present above ceilings and other generally inaccessible spaces. Locations of observed known asbestos-containing materials are indicated on the facility layout presented in Appendix A.

Typical miscellaneous building materials observed but not sampled include floor tiles and associated mastic, drywall, cove base and associated mastic, pipe insulation and ceiling tiles.

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion or suspected mold growth during this survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section contains general office space. The administration section is generally utilized by all of the Parkersburg Readiness Center staff members. No Indoor Air Quality concerns were noted by the Parkersburg Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. All readings were within acceptable guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Outside - Baseline	0.8	423	60.4	52.0
Classroom	0.8	659	73.0	45.9
Former Range Office	0.6	724	76.5	45.1
S-1 Office	0.7	637	74.9	43.8

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

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

No potential for contamination of clean air sources was observed at the facility

AECOM did not observe any obvious indications of maintenance issues with the general ventilation system from readily accessible areas. Percentage of outside air supplied by the HVAC system was calculated using CO_2 levels, and was determined to be approximately 24%, using the ASHRAE formula $\%OA=((C_{RA}-C_{SA})/(C_{RA}-C_{OA}))X100$, where C_{RA}=673 ppm CO_2, C_{SA}=612 ppm CO_2, and C_{OA}=423 ppm CO_2. Based on the carbon dioxide levels observed inside the building during this assessment, there is appears to be a sufficient quantity of outside air being delivered via the HVAC system in order to satisfy the occupant load.

Very little dust was observed at diffusers, and site personnel indicated that the system seems to work well. Temperature readings were constant in all areas occupied by readiness center personnel.

4.1.2 HVAC Maintenance

No information regarding HVAC maintenance was available at the time of the survey. Very little dust was observed on supply grilles in the facility.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in all areas.

Table 5-1: Light Survey

Location	Results (Foot candles)	Met Standard (Y/N)	Standard*
Conference room 1	70.1	Y	30
Conference room 2	110.5	Y	30
Corridor	78.5	Y	5
S-1 Office	77.3	Y	50
Copy Room	150	Y	10
Mess storage	152.6	Y	30
Med. Rm. (office)	153.6	Y	50
HHC Cdr.	68.3	Y	50
Commo Room	34.3	Y	30
Kitchen	143.4	Y	50
Latrine	53.3	Y	5
Locker Room and shower areas	32.1	Y	5-7
Boiler room	32.1	Y	30
Range converted to offices (all spaces)	56-85	Y	50
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no garage associated with the Parkersburg Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Parkersburg Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

Approximately 800 linear feet of asbestos containing pipe insulation and 14,000 square feet of asbestos-containing floor tile were observed during the evaluation. The materials are generally in good condition, with the exception of approximately 1 linear foot of pipe insulation above the latrine door adjacent to the drill hall.

Approximately 20 square feet of peeling paint was observed in latrine adjacent to the drill hall and 5 square feet of peeling paint was observed in the boiler room during the survey. Analytical results indicated the presence of quantifiable levels of lead in both paints sampled.

No evidence of water intrusion was observed during the survey.

Primary heating in the building is provided via a boiler room that feeds radiant heaters throughout the main floor, as well as rooftop air handling units that provide fresh air to occupied spaces.

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

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

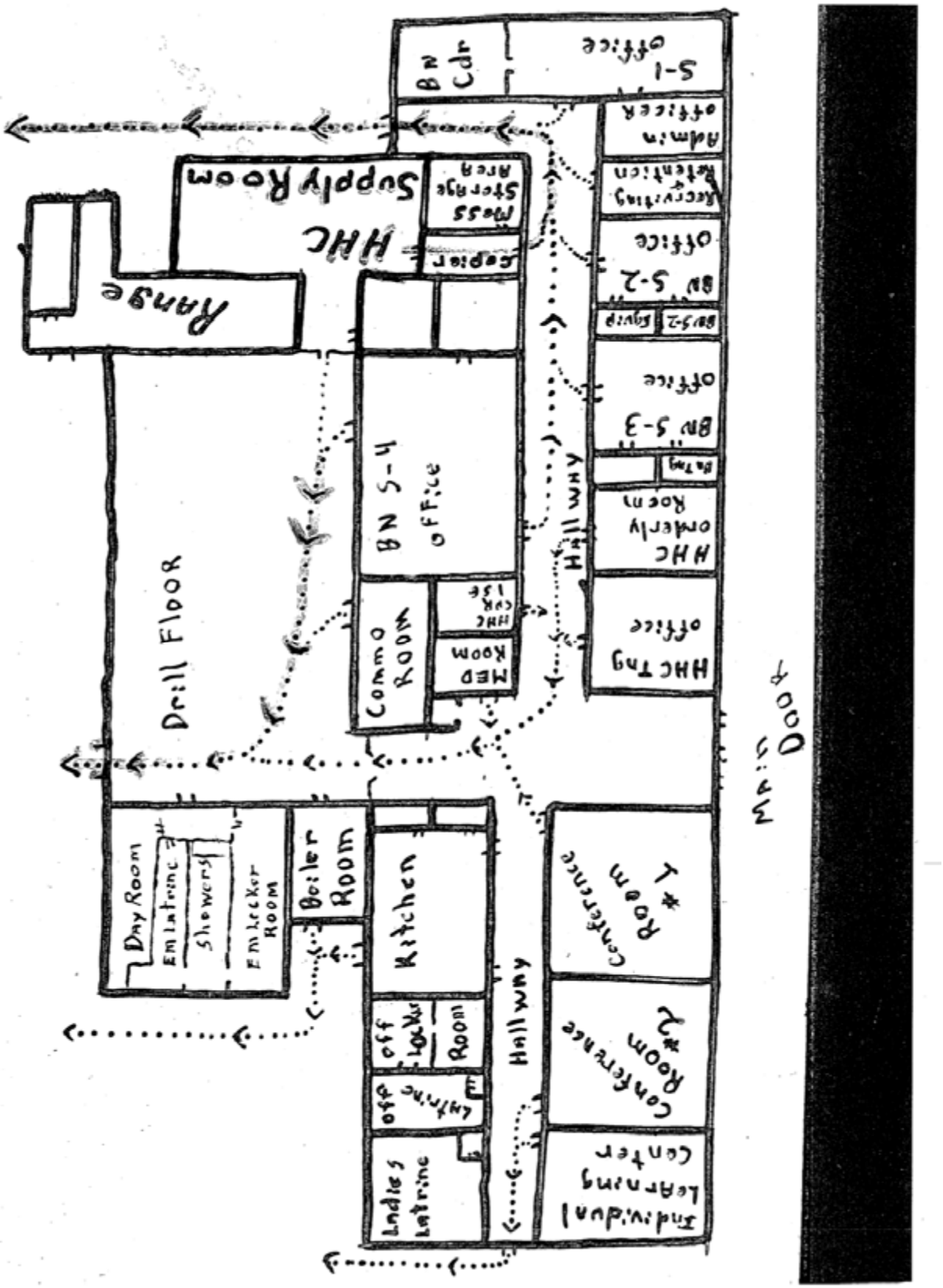
The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may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

or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during AECOM's inspection of the site.

Appendix A

Parkersburg Readiness Center Facility Layout

AECOM



Appendix B

Parkersburg Readiness Center Photographs

AECOM

Photograph 1

Building Exterior Front

Photograph 2

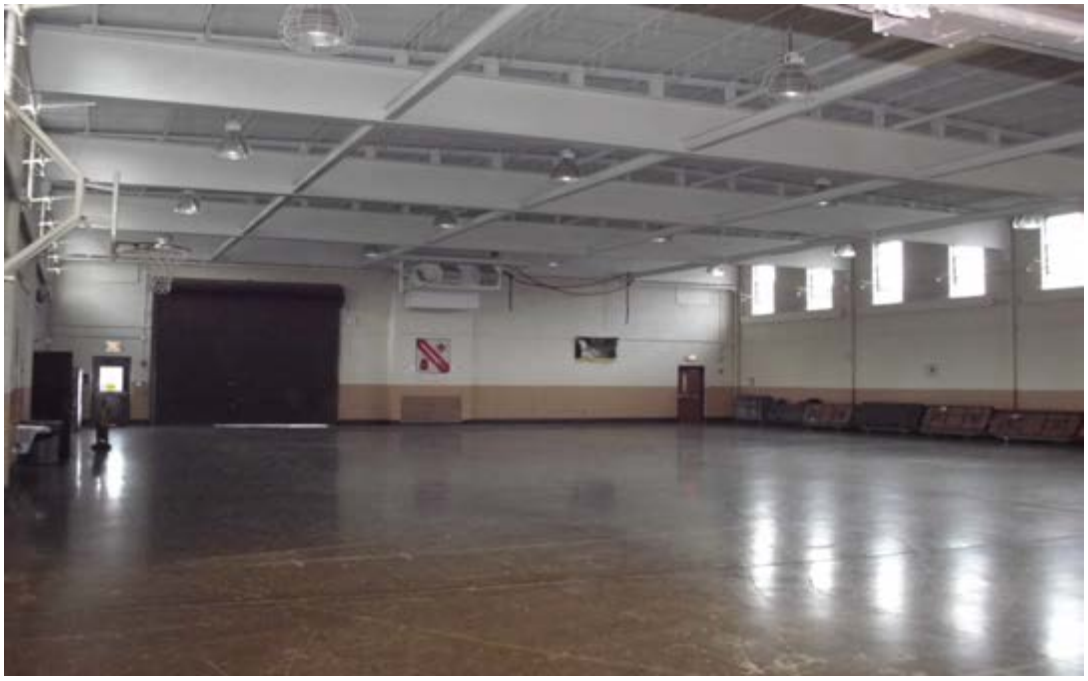
Boiler Room (peeling paint that was sampled is on pipe)

AECOM

Photograph 3

Damaged ACM TSI near Restroom

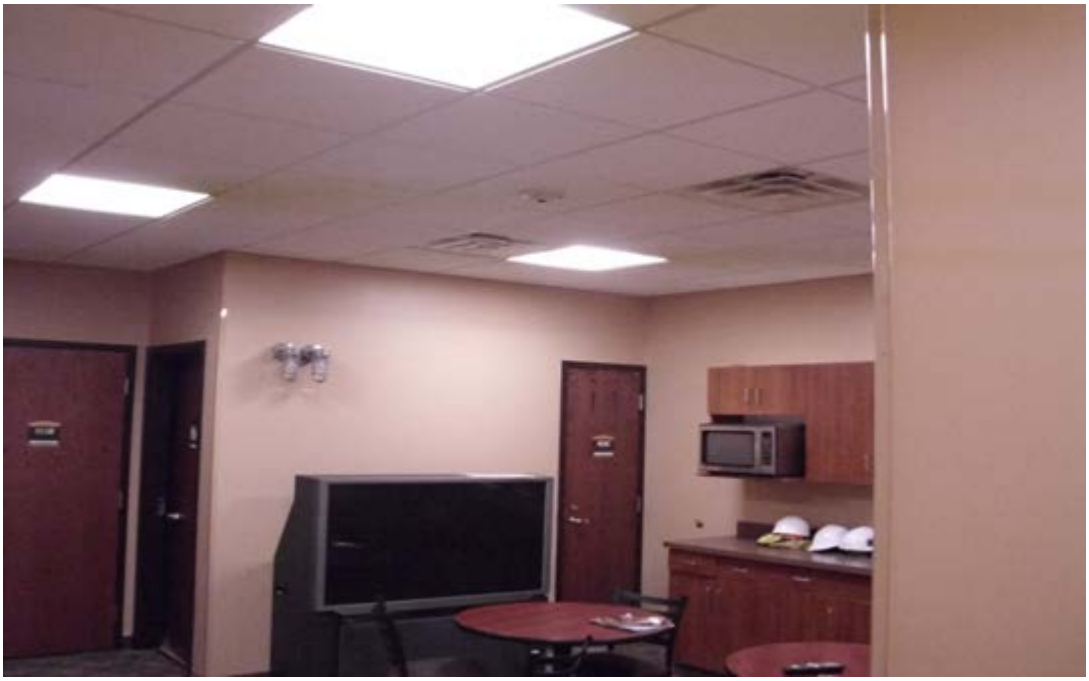
Photograph 4



Drill Hall

AECOM

Photograph 5



Former Range-Break Room

Photograph 6

Former Range

AECOM

Photograph 7

Peeling Paint on Rest Room Conduit

Photograph 8

Typical Construction

Appendix C

Analytical Results

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A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	**Job Name:**	Parkersburg RC	**Chain Of Custody:**	514267		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	West Virgina	**Date Submitted:**	10/23/2012		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	AECOM		
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	10/30/2012	**Report Date:**	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13008382	Pb-01	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008383	Pb-02	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008384	Pb-03	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008385	Pb-04	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008386	Pb-05	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008387	Pb-06	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008388	Pb-07	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008389	Pb-08	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008390	Pb-09	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008391	Pb-10	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2	
13008392	11	Flame	Paint Chip	****	N/A	0.0087	%Pb		0.048	%Pb	
13008393	12	Flame	Paint Chip	****	N/A	0.0083	%Pb		0.015	%Pb	

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LAB #100470

Client:	National Guard Bureau	Job Name:	Parkersburg RC	Chain Of Custody:	514267		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virgina	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

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	Total ug	Final Result	Comments

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Analyst: [redacted]

Technical Manager: [redacted]

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514267

Mailing/Billing Information:

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

Submittal Information:

1. Job Name: PARKERSBURG RC
2. Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone #
5. Submitted by: AECOM (Signature): Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day + ☐ Results Required By Noon	☒ Email: Non-Responsive @aecom.com
Comments:	☐ 2 Day Date Due: 10/30/12	☐ Fax: Non-Responsive @us.army.mil
		☐ Verbal: Non-Responsive @us.army.mil

Asbestos Analysis

*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)

TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)

PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)

MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)

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

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

Metals Analysis

☒ Pb Paint Chip 2 (QTY)
☒ *Pb Dust Wipe (wipe type ghost) 10 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

SAMPLE INFORMATION				ANALYSIS							MATRIX				CLIENT CONTACT
CLIENT ID #	SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/23/12 @ Via: FedEx By (Print): Non-Responsive Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Page 1 of 1

Date Collected: 10/15/12
Job Number: 60275401
Contact Pers: Non-Responsive

Job Name: PARKERSBURG RC
Job Location: WEST VIRGINIA
Address: 1200 BLIZZARD DR. PARKERSBURG, WV

Company: AECOM
Phone Number: 315 432 0506
Collected B: Non-Respo
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
PB-01	Drill Hall North	Floor	16 in^2	Chest
PB-02	" " South	Floor	"	"
PB-03	" "	TABLETOP	"	"
PB-04	Kitchen	Counter	"	"
PB-05	Classroom	Grille	"	"
PB-06	Former Range now office	Desk	"	"
PB-07	" " "	~~Top of microwave File cabinet~~	"	"
PB-08	" " "	Corridor floor	"	"
PB-09	Classroom	Floor	"	"
PB-10	Former Range Break Rm	Grille	"	"
11	Bathroom	Conduit Paint-Ferr	—	Chip
12	Boiler Room	Pipe Paint-Blue	—	Chip

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

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Prepared for:

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




Industrial Hygiene Survey
for WVARNG – Point Pleasant Readiness Center
4194 Ohio River Road
Point Pleasant, West Virginia 25550

AECOM
December 2012
Document No.: 60275401/Point Pleasant Readiness Center

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

Industrial Hygiene Survey for WVARNG – Point Pleasant Readiness Center 4194 Ohio River Road Point Pleasant, West Virginia 25550

Non-Responsive
Industrial Hygienist

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AECOM Environment
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Executive Summary

On October 16, 2012, AECOM Technical Services Northeast, Inc. (AECOM) conducted an Industrial Hygiene (IH) survey of the Point Pleasant Readiness Center facility located at 4194 Ohio River Road in Point Pleasant, West Virginia. SFC Non-R was the point of contact for the facility and Maintenance Repairman (MR2) Mr. Non-R accompanied AECOM during the survey to provide access and information concerning the Point Pleasant Readiness Center operations.

The industrial hygiene survey was conducted in general accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Point Pleasant Readiness Center is currently staffed by 4 personnel. The facility is configured as administrative areas and a drill hall. The facility has a firing range that was closed several years ago, but no remedial activities have been undertaken since the range closure. The range is located at the east side of the facility.

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

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

The Point Pleasant Readiness Center is housed in a single story masonry building, slab on grade, constructed circa 1955.

The local exhaust ventilation system in the maintenance bay designed to control vehicle emissions was not observed in operation during the IH survey. The system was activated and face velocities of all accessible exhaust ducts were measured as part of the IH survey. The results of this assessment indicate the system performance does not meet the applicable guidelines.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005, with the exception of the Maintenance Bay and Indoor Range.

Many of the wipe samples collected in association with the range and administrative areas indicated lead levels above the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the U.S. Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 micrograms per square foot (ug/ft^2) for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

No damaged suspect asbestos containing materials were observed during the evaluation. Site personnel indicated that there was a full scale abatement project at the facility in 1985.

Three different types of peeling paint were observed in the drill hall and locker room. Samples were collected and submitted for analysis. None of the samples collected indicated the presence of quantifiable lead.

No visible evidence of water intrusion or suspected mold growth was observed in the Readiness Center during the survey. However, the NCO Club building adjacent to the Readiness Center showed significant evidence of water intrusion. Water intrusion is a mold growth risk factor.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of rooftop air handling units that provide fresh air to occupied spaces.

1.0 Facility Description and Operations

The Point Pleasant Readiness Center is located in a single story masonry building constructed circa 1955. The drill hall is at the center of the facility surrounded by administrative spaces on the east, north and west sides and storage on the south side. There is a firing range which was closed several years ago and is located on the northeast side of the facility. Interior finishes are typically comprised of painted block walls, drywall; acoustical drop ceilings, and floor tile.

The primary activity at the Point Pleasant Readiness Center is routine administrative duties. The Point Pleasant Readiness Center is currently staffed by approximately 4 personnel. There is a maintenance Bay at the facility, but no vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall and administrative areas, following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost Wipes.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
PP-01	Drill Hall Floor - North	140 ug/ft^2
PP-02	Drill Hall Floor – South	<110 ug/ft^2
PP-03	Drill Hall on Electrical Fixture	190 ug/ft^2
PP-04	Kitchen – Counter	160 ug/ft^2
PP-05	Admin. Office – Supply Grille	570 ug/ft^2
PP-06	Commander's Office – Desk	<110 ug/ft^2
PP-07	Training Office 1 – Top of Cabinet	<110 ug/ft^2
PP-08	Front Corridor – Floor	<110 ug/ft^2
PP-09	Conference Room – Supply Grille	140 ug/ft^2
PP-10	Closed Firing Range – Exhaust Duct	9,700 ug/ft^2
PP-11	Closed Firing Range – Bullet Trap	15,000,000 ug/ft^2
PP-12	Closed Firing Range – Light Fixture	47,000 ug/ft^2
PP-13	Closed Firing Range – Overhead Heater	61,000 ug/ft^2
PP-14	Closed Firing Range – Stored Item	3,800 ug/ft^2
PP-15	Closed Firing Range – Floor	15,000 ug/ft^2
PP-16	Outside Range - Floor	2,700 ug/ft^2

ug/ft^2 = Micrograms per square foot.

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

Lead in excess of the action level of 200 micrograms per square foot (ug/ft^2) per NG-PAM 420-15 was detected in all wipe samples collected in association with the closed firing range as well as a wipe sample collected on the HVAC supply grille in the Admin. Office. The firing range has been closed for several years but was never remediated. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. AECOM observed three different peeling paints in the locker room and drill hall. Samples of each of the three paints were collected and none found to contain quantifiable levels of lead. Laboratory analytical results are presented in Appendix C.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos-containing materials (ACM) in readily accessible areas of the Point Pleasant Readiness Center during this survey. The NCO Club building adjacent to the readiness center reportedly contains approximately 1,440 square feet of asbestos-containing floor tile. The building is vacant and not currently in use by readiness center personnel.

Typical miscellaneous building materials observed but not sampled include floor tiles and associated mastic, cove base and associated mastic, and ceiling tiles.

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion or suspected mold growth in the Point Pleasant Readiness Center during this survey.

Evidence of water intrusion was observed in the NCO Club building adjacent to the readiness center. Water intrusion is a mold growth risk factor. The building is vacant and not currently in use by readiness center personnel.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section contains general office space. The administration section is generally utilized by all of the Point Pleasant Readiness Center staff members. No Indoor Air Quality concerns were noted by the Point Pleasant Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. All readings were within acceptable guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Outside - Baseline	0.6	444	43.6	67.5
Commander's Office	2.3	499	69.3	41.4
Unit Admin. Office	1.1	523	69.4	38.2
Locker Room	1.0	458	69.6	37.8

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

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

The presence of a maintenance bay at the facility presents the potential for contamination of clean air sources at the facility. However, the maintenance bay is rarely used.

AECOM did not observe any obvious indications of maintenance issues with the general ventilation system from readily accessible areas. Percentage of outside air supplied by the HVAC system was calculated using CO_2 levels, and was determined to be approximately 22%, using the ASHRAE formula $\%OA=((C_{RA}-C_{SA})/(C_{RA}-C_{OA}))X100$, where C_{RA}=493 ppm CO_2, C_{SA}=482 ppm CO_2, and C_{OA}=444 ppm CO_2. Based on the carbon dioxide levels observed inside the building during this assessment, there is appears to be a sufficient quantity of outside air being delivered via the HVAC system in order to satisfy the occupant load.

A small amount of dust was observed at diffusers. Site personnel indicated that the system seems to work well. Temperature readings were constant in all areas occupied by readiness center personnel.

4.1.2 HVAC Maintenance

HVAC maintenance is reportedly performed quarterly as needed. A small amount of dust was observed on supply grilles in the facility, an indication that filter changes may be required.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in all areas.

Table 5-1: Light Survey

Location	Results (Foot candles)	Met Standard (Y/N)	Standard*
Commander's Office	63.8	Y	50
Conference Room	64.3	Y	30
Learning Center	63.5	Y	30
Library	69.6	Y	30
Range	26.2	N	50-100
Supply	86.3	Y	30
Maintenance Bay (Storage)	20-48.5	N	30
Inspection	229.1	Y	100
Tool Storage	57.2	Y	30
Unit Office	64.4	Y	50
Unit Admin. Office	74.1	Y	50
Training Office 1	66.5	Y	50
Training Office 2	63.9	Y	50
Corridor	43.5	Y	10
Locker Room	54.4-72.3	Y	7
Drill Floor	45-69	Y	30
Classrooms	135.7-168.3	Y	30
Kitchen	103.6	Y	50
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI/IESNA RP-7-01)			

6.0 Evaluation of Attached Garage

There is a maintenance bay located at the southeast corner of the Point Pleasant Readiness Center. The maintenance bay is reportedly used only for storage and vehicle maintenance activities are not performed at the facility. Reference values below are those associated with Field Maintenance Shops for comparison, although vehicle maintenance activities are not generally performed at Readiness Centers.

The maintenance bay is equipped with a local exhaust ventilation system designed to capture and control engine emissions (see Appendix A). The local exhaust ventilation system for emissions in the maintenance bay consists of an exhaust fan located in the overhead space of the maintenance bay. The exhaust fan connects via rigid ductwork to flexible duct branches distributed throughout the bay. The flexible duct branches (approximately eight inches in diameter) are connected to tapered circular plain-opening capture hoods that can be placed over engine exhaust pipes. The capture hoods are supported by a ceiling-mounted pulley system that provides for operator flexibility in maneuvering and placement.

A direct visual observation of the apparent effectiveness of the local ventilation systems was not accomplished, as no vehicles were operated in the bay during the survey. The local ventilation system for capturing and removing engine emissions was reported by site personnel to not be used. AECOM activated the system and measured the face velocities of each accessible duct with a VelociCalc Plus air velocity meter.

The following table presents the evaluation results compared to typical required exhaust flow rates for vehicles routinely serviced by field maintenance shops:

Table 6-1: Local Ventilation System Measured Air Flow Rates:

Local Ventilation System Measured Air Flow Rates		
Location	**Air Flow – cubic feet per minute (cfm)**	**Reference Value***
Exhaust #1	230 cfm	1370 cfm
Exhaust #2	189 cfm	1370 cfm

The Reference Value (1370 cubic feet per minute, or cfm) for the vehicle emission exhaust system was determined using theoretical values in the ACGIH calculation (below), based on an engine displacement of 6.2L, exhaust temperature of 267^{o}F, and 3,800 engine rpm. These values were based on using the highest flow rate required for tactical vehicles routinely serviced by ARNG maintenance facilities.

- Reference calculation – $Q_e=(1.2)(D_{eng}xN)[(460F+T_{eng})/530F]$

  Where Q_e=Exhaust Flow; T_{eng}=Engine Tailpipe Temperature (^{o}F); D_{eng}=Engine displacement (ft^3); and N=Engine rpm; 1.2 represents a 20% safety factor.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Point Pleasant Readiness Center.

The local exhaust ventilation system in the maintenance bay designed to control vehicle emissions was not observed in operation during the IH survey. The system was activated and face velocities of all accessible exhaust ducts were measured as part of the IH survey. The results of this assessment indicate the system performance does not meet the applicable guidelines.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005, with the exception of the Maintenance Bay and Indoor Range.

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No damaged suspect asbestos containing materials were observed during the evaluation. Site personnel indicated that there was a full scale abatement project at the facility in 1985.

Three different types of peeling paint were observed in the drill hall and locker room. Samples were collected and submitted for analysis. None of the samples collected indicated the presence of quantifiable lead.

No visible evidence of water intrusion or suspected mold growth was observed in the Readiness Center during the survey. However, the NCO Club building adjacent to the Readiness Center showed significant evidence of water intrusion. Water intrusion is a mold growth risk factor.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of rooftop air handling units that provide fresh air to occupied spaces.

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

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

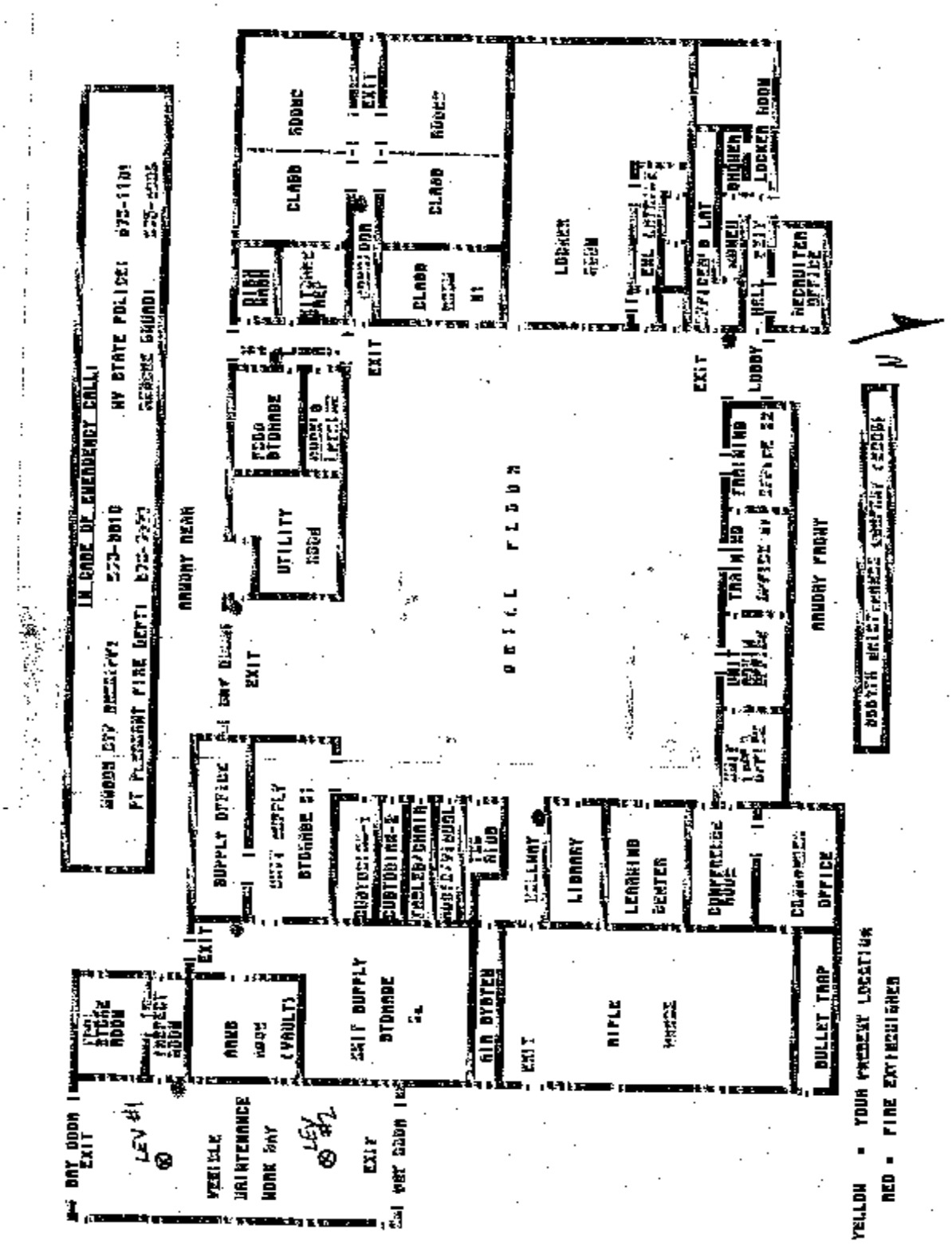
be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

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

Appendix A

Point Pleasant Readiness Center Facility Layout

AECOM



Appendix B

Point Pleasant Readiness Center Photographs

AECOM

Photograph 1

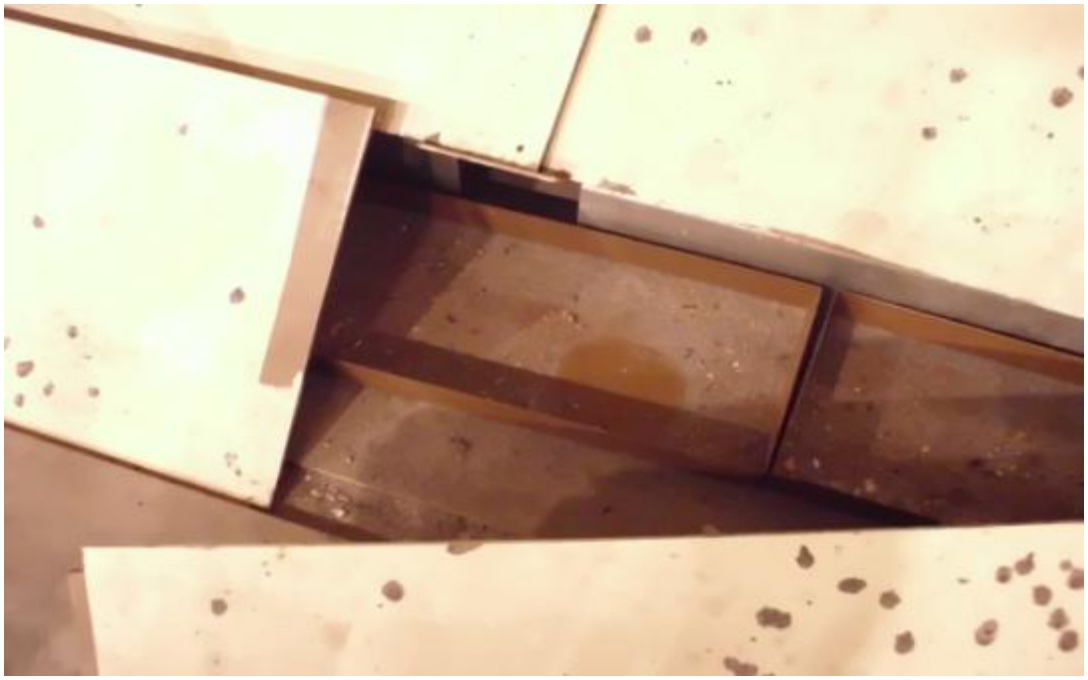
Building Exterior Front

Photograph 2

Range From Firing Line

AECOM

Photograph 3



Bullet trap in Range

Photograph 4

Range Exhaust System

AECOM

Photograph 5

Drill Hall

Photograph 6

Peeling Paint in Drill Hall

AECOM

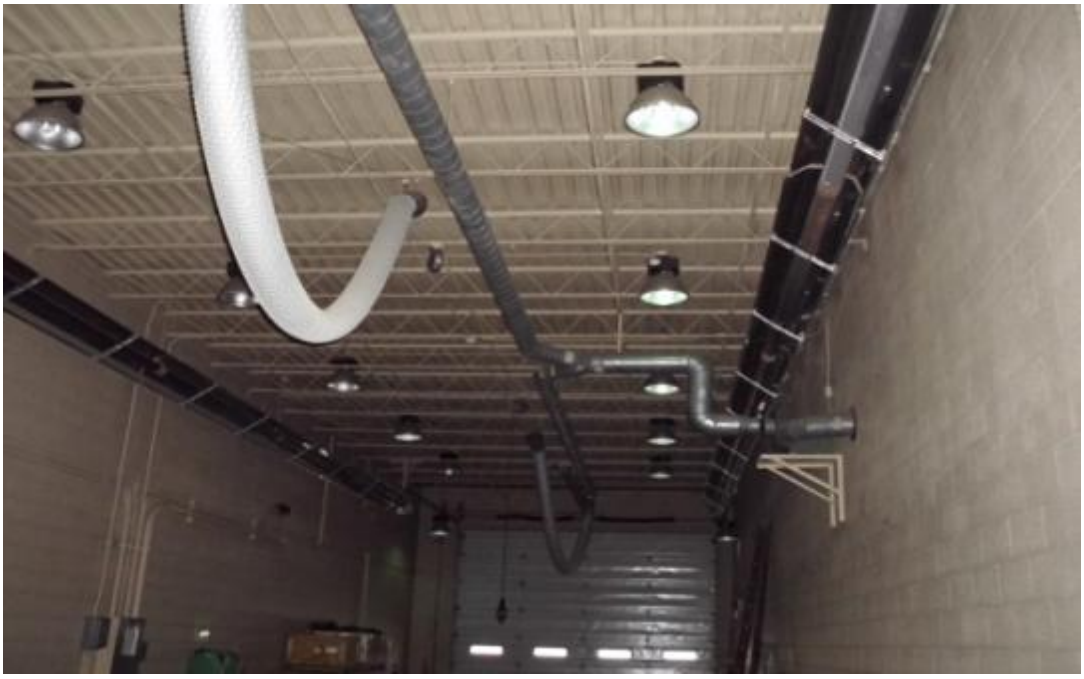
Photograph 7

Former NCO club bldg - slated for demolition

Photograph 8

Garage LEV Exterior

Photograph 9



LEV in Garage Area

Photograph 10

Water damage and suspect mold growth – Front Training Office

Appendix C

Analytical Results

AECOM

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:	Point Pleasant RC	Chain Of Custody:	514271		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/31/2012

Attention: Non-R [redacted] I

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
13008421	PP-01	Flame	Wipe	****	0.111	110	ug/ft²	16	140	ug/ft²	
13008422	PP-02	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008423	PP-03	Flame	Wipe	****	0.111	110	ug/ft²	21	190	ug/ft²	
13008424	PP-04	Flame	Wipe	****	0.111	110	ug/ft²	17	160	ug/ft²	
13008425	PP-05	Flame	Wipe	****	0.111	110	ug/ft²	64	570	ug/ft²	
13008426	PP-06	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008427	PP-07	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008428	PP-08	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008429	PP-09	Flame	Wipe	****	0.111	110	ug/ft²	16	140	ug/ft²	
13008430	PP-10	Flame	Wipe	****	0.111	110	ug/ft²	1100	9700	ug/ft²	
13008431	PP-11	Flame	Wipe	****	0.111	110	ug/ft²	1700000	15000000	ug/ft²	
13008432	PP-12	Flame	Wipe	****	0.111	110	ug/ft²	5200	47000	ug/ft²	
13008433	PP-13	Flame	Wipe	****	0.111	110	ug/ft²	6800	61000	ug/ft²	
13008434	PP-14	Flame	Wipe	****	0.111	110	ug/ft²	430	3800	ug/ft²	
13008435	PP-15	Flame	Wipe	****	0.111	110	ug/ft²	1700	15000	ug/ft²	
13008436	PP-16	Flame	Wipe	****	0.111	110	ug/ft²	300	2700	ug/ft²	
13008437	PP-17	Flame	Paint Chip	****	N/A	0.0092	%Pb		<0.0092	%Pb	
13008438	PP-18	Flame	Paint Chip	****	N/A	0.0085	%Pb		<0.0085	%Pb	
13008439	PP-19	Flame	Paint Chip	****	N/A	0.006	%Pb		<0.006	%Pb	

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AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

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Client:	National Guard Bureau	Job Name:	Point Pleasant RC	Chain Of Custody:	514271		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/31/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

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

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

An Non-Responsive

Technical M Non-Responsive

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AECOM

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514271

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

Submittal Information:
1. Job Name: Point Pleasant RC
2. Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive
5. Submitted by: AECOM (Signature) Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and contact to contacts on file.

AFTER-HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive aecom.com
Comments:	☐ 2 Day (Date Due): 10/30/12	☐ Fax: us.army.mil
		☐ Verbal: us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)
*It is recommended that bluk samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area) Dust D6480-99 (QTY)
TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)
☒ All samples received in good condition unless otherwise noted. (TEM Water samples °C)
If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 3 (QTY)
☒ *Pb Dust Wipe (wipe type: ghost) 16 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/TIME	VOL (L)/Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WIPE AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/30/12 @ Via: FedEx By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/16/12
Job Number: 60275201
Contact Person: Non-Responsive

Job Name: Pt. Pleasant
Job Location: West Virginia
Address: 4614 Ohio River Rd
Pt. Pleasant, WV

Company: AECOM
Phone Number: 315 432 0506
Collected By: Non-Responsive
COC Number: —

Page 1 of

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
PP-01	DRILL HALL - NORTH	FLOOR	16in²	GHOST
PP-02	South	FLOOR		
PP-03	ON ELEC. FIXT.	ELEC. BOX		
PP-04	KITCHEN	COUNTER/TABLE		
PP-05	ADMIN OFFICE	Supply Grille		
PP-06	COMMANDERS OFFICE	DESK		
PP-07	TRAINING OFFICE 1	TOP OF CABINET		
PP-08	FRONT Corridor	FLOOR		
PP-09	Conference Rm	Supply Grille		
PP-10	RANGE EXHAUST Duct	EXH. Duct		
PP-11	RANGE	Bullet Trap		
PP-12		LIGHT Fixture		
PP-13		OH Heater		
PP-14		Stored Item in RANGE		
PP-15	↓ ↓	FLOOR		
PP-16	OUT SIDE RANGE	FLOOR	▽	▽
PP-17	Locker Rm (TAN)	SKYLIGHT Trim	—	Chip
PP-18	Drill Hall (TAN)	WALL	—	Chip
PP-19	Drill Hall (Brown)	WALL	—	Chip

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0951/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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

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

17. OSHA Instruction Letter 02-02-058, Lead Exposure in Construction, Office of Health Compliance Assistance, 13 December 1993.

18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

19. NG PAM 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006. http://www.ngbpdc.ngb.army.mil/pubs/420/ngpam420_15.pdf

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 07 July 2004

MEMORANDUM FOR WVARNG, Point Pleasant Readiness Center, ATTN: SGT Non-Respons Non-Responsiv Route 1 Box 333B, Pt. Pleasant, WV 25550-9641

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive

Encl

Regional Industrial Hygienist

CF: OHM, MAJ Non-Responsive

National Guard Armory
Point Pleasant Readiness Center
Point Pleasant, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above the recommended level in almost all areas sampled. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the building that may be contaminated with lead should be thoroughly cleaned. Note that the extremely high lead contamination in the converted firing range may be contaminating the rest of the building. **RAC - 3**
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in almost all areas sampled. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the mold growth that may lead to indoor air quality problems. **RAC - 5**
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- The housekeeping was determined to be average since dust was observed throughout the building. The housekeeping should be improved. **RAC - 5**
- Measurements for temperature revealed that levels were above the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used to decrease the temperature at specific locations. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in few of the areas measured; therefore consideration should

be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**

- Wipe sampling for lead in the converted firing range revealed concentrations well above the recommended level. The entire converted firing range and the stored items in the range must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures, heaters, stored items, and ventilation ductwork due to the high lead levels. The ventilation system in this area, if functional, should not be used. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible. **RAC - 3**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE	OTSG APPROVED (Date)
WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD	

DIRECTORATE Point Pleasant Armory BLDG/ROOM Point Pleasant
SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study
JOB DESCRIPTION/SERIES Military/Administrative Operations
SAMPLING DATE November 4, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.003	<0.003	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive ndustrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (*For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility*)

NAME: Non-Responsive SGT: 11/4/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: Unavailable		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-675-3950		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 1 MAY 78 4700

HSXR-APG-Z OP 32 1 Jan 90

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw Environmental, Inc.

National Guard Armory
Point Pleasant Readiness Center – Point Pleasant, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Point Pleasant Readiness Center – Point Pleasant, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

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List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Point Pleasant Readiness Center in Point Pleasant, West Virginia. Non-Responsive performed the evaluation on 04 November 2003. The point of contacts at the readiness center was SGT Non-Responsive and SGT Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above the recommended level in almost all areas sampled. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the building that may be contaminated with lead should be thoroughly cleaned. Note that the extremely high lead contamination in the converted firing range may be contaminating the rest of the building.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in almost all areas sampled. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- The housekeeping was determined to be average since dust was observed throughout the building. The housekeeping should be improved.
- Measurements for temperature revealed that levels were above the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used to decrease the temperature at specific locations.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in few of the areas measured; therefore consideration should

be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations well above the recommended level. The entire converted firing range and the stored items in the range must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures, heaters, stored items, and ventilation ductwork due to the high lead levels. The ventilation system in this area, if functional, should not be used. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Point Pleasant Readiness Center in Point Pleasant, West Virginia. Non-Responsive performed the evaluation on 04 November 2003. The point of contacts at the readiness center was SGT Non-Responsive and SGT Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at almost all areas sampled at concentrations above the recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E). Results of the wipe sampling are provided in Table 1. The results revealed lead, with concentrations, at the following locations:

- Assembly room, utility box top surface (Sample 7), at 230 micrograms lead per square foot ($\mu g/ft^2$);
- Assembly room, utility box top surface (Sample 8), at 770 $\mu g/ft^2$;
- Assembly room, utility box top surface (Sample 10), at 300 $\mu g/ft^2$;
- Assembly room, utility box top surface (Sample 11), at 610 $\mu g/ft^2$;
- Commander's Office, desktop, at 730 $\mu g/ft^2$;

- Locker Room, locker top surface, at 1300 µg/ft^2;
- Classroom, air grille, at 1300 µg/ft^2;
- Supply Room, window sill, at 2500 µg/ft^2;
- 1st SGT Office #110, desktop, at 710 µg/ft^2;
- Administrative Office #148, cabinet top surface, at 1200 µg/ft^2;
- Recruiting Office #149, window sill, at 680 µg/ft^2; and
- Lobby heater vent top surface, at 2500 µg/ft^2.

It is recommended that these surfaces and the immediate areas around these surfaces be thoroughly cleaned to reduce the lead level to below 200 µg/ft^2. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the building that may be contaminated with lead should be thoroughly cleaned. Note that the extremely high lead contamination in the converted firing range may be contaminating the rest of the building.

In addition, wipe sampling for lead revealed concentrations above a level of 40 µg/ft^2 in the areas listed above and the converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 µg/ft^2 that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on one (1) full-time building occupant. In addition, a general sample was taken in the Training Office #1 (Recruiter's Office). (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. The inspection did not reveal any materials suspected of containing asbestos.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage and possible mold on the ceiling of the out-of-use firing range and the learning center (room #144). Water damage was observed as stained ceiling tiles in rooms 119, 115, 149, 150, 145, 114, and 143.

The source of the water damage was likely from roof leaks. The water damage in the dressing room has been fixed, however, the ceiling remains discolored. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be average since dust was observed throughout the building. The housekeeping should be improved.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interviews with employees and measurements for carbon dioxide and humidity revealed no indoor air quality concerns. However, measurements for temperature revealed that levels were above the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used to decrease the temperature at specific locations. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There was a local exhaust ventilation system at this armory. The system was completely encapsulating (a hose to ventilate the exhaust air fits over the exhaust pipe of a vehicle); therefore, no ventilation system evaluations utilizing smoke tubes were

conducted. It appeared that the ventilation system exhaust was adequate in removing vehicle exhausts from the area.

2.5.2 Contamination of Clean Air Sources

There is no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in few areas, including the women's latrine and administrative office #148.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a not-in-use indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the range. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 17000 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 9800 $\mu g/ft^2$;
- light fixture at 320000 $\mu g/ft^2$;
- stored item (electrical control box top surface) at 11000 $\mu g/ft^2$;
- overhead heater at 22000$\mu g/ft^2$; and
- inside remaining ventilation ductwork at 7600 $\mu g/ft^2$.

The lead levels at all of these locations were well above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). The entire converted firing range and the stored items in the range must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the light fixtures, heaters, stored items, and ventilation ductwork due to the high lead levels. The ventilation system in this area, if functional, should not be used. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, suspected asbestos-containing material, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, water damage, visible mold, housekeeping, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Point Pleasant, West Virginia
Date of Sampling: 04 November 2003

Sample Number	Location	Results,µg/ft²[a]
WVPOI308-7	Assembly room - utility box top surface (adjacent to garage door) (See Building Layout - - Appendix B)	230
WVPOI308-8	Assembly room - - utility box top surface (adjacent to firing range hallway) (See Building Layout Appendix B)	770
WVPOI308-9	Assembly room - table top (See Building Layout - - Appendix B)	11
WVPOI308-10	Assembly room – utility box top surface (adjacent to recruiting office) (See Building Layout - - Appendix B)	300
WVPOI308-11	Assembly room – utility box top surface (adjacent to kitchen hallway) (See Building Layout - - Appendix B)	610
WVPOI308-12	Field Blank	< 0.3 µg
WVPOI308-20	Commander's Office desktop	730
WVPOI308-21	Locker Room - locker top surface	1300
WVPOI308-22	Classroom - - air grille	1300
WVPOI308-23	Kitchen - - microwave top surface	< 2.7
WVPOI308-24	Field Blank	0.31 µg
WVPOI308-25	Supply Room – window sill	2500
WVPOI308-26	Learning Center #144 – television top surface	12
WVPOI308-27	1st SGT Office #110 - desktop	710
WVPOI308-28	Administrative Office #148 - - cabinet top surface	1200
WVPOI308-29	Recruiting Office #149 – window sill	680
WVPOI308-30	Field Blank	0.3 µg
WVPOI308-31	Lobby – heater vent top surface	2500
WVPOI308-32	Food Storage - desk top	33

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone/General Air Samples for Lead
National Guard Armory
Point Pleasant, West Virginia
Date of Sampling: 04 November 2003

Sample Number	Employee/ General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVPOI308-A1	Non-Responsive	1328-1545/137	2.5369	347.55	<0.003
WVPOI308-A2	Training Office # 1	1330-1545/135	2.5063	338.34	<0.003
WVPOI308-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Point Pleasant, West Virginia
Date of Sampling: 04 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Kitchen	1	681	44.7	76.3
Outdoors	-	461	46.5	82.4

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Point Pleasant, West Virginia

Date of Sampling: 04 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Commander's Office	40.1-90.4	70	Some Areas
Women's Latrine	4.3-25.6	40	No
Recruiting Office #149	52.3-85.6	70	Some Areas
Administrative Office #148	27.2-61-3	70	No
1st SGT Office #110	52.1-94.3	70	Some Areas
Learning Center #144	74.2-121.3	70	Yes
Food Storage Room	64.7-104.1	30	Yes
Corridor adjacent to Classroom #119	17.6-57.3	7.5	Yes

[a] fc -- Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Point Pleasant, West Virginia

Date of Sampling: 04 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVPOI308-13	Outside the range	17000
WVPOI308-14	Floor	9800
WVPOI308-15	Light Fixture	320000
WVPOI308-16	Stored Item (electrical control box top surface)	11000
WVPOI308-17	Overhead Heater	22000
WVPOI308-18	Field Blank	< 0.3 µg
WVPOI308-19	Inside Remaining Ventilation Ductwork	7600

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	POINT PLEASANT ARMORY WEST VIRGINIA ARNG	POINT PLEASANT

OCATION/CODE	OPERATION/CODE
ADMINISTRATIVE AREAS / AA	ADMINISTRATIVE OPERATIONS / ADO

URVEY DATE	EVALUATOR (Initials)
04 NOVEMBER 2003	Non-Responsive

AACOM/CODE	SUBMACOM/CODE	SUPERVISOR
ARMY NATIONAL GUARD	XX	unknown

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 675 3950	3666th Maint. CO / CO Rear	3	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	4	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

AAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
1	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3 - low	D-Uncontrolled Physical
7439-92-1	ead, Inorganic dust fumes & Pb	2-moderate	C Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	DOT AVAILABLE	MIL
					CIV

SECTION 6. COMMENTS

No comments Non-Responsive See attached sheet

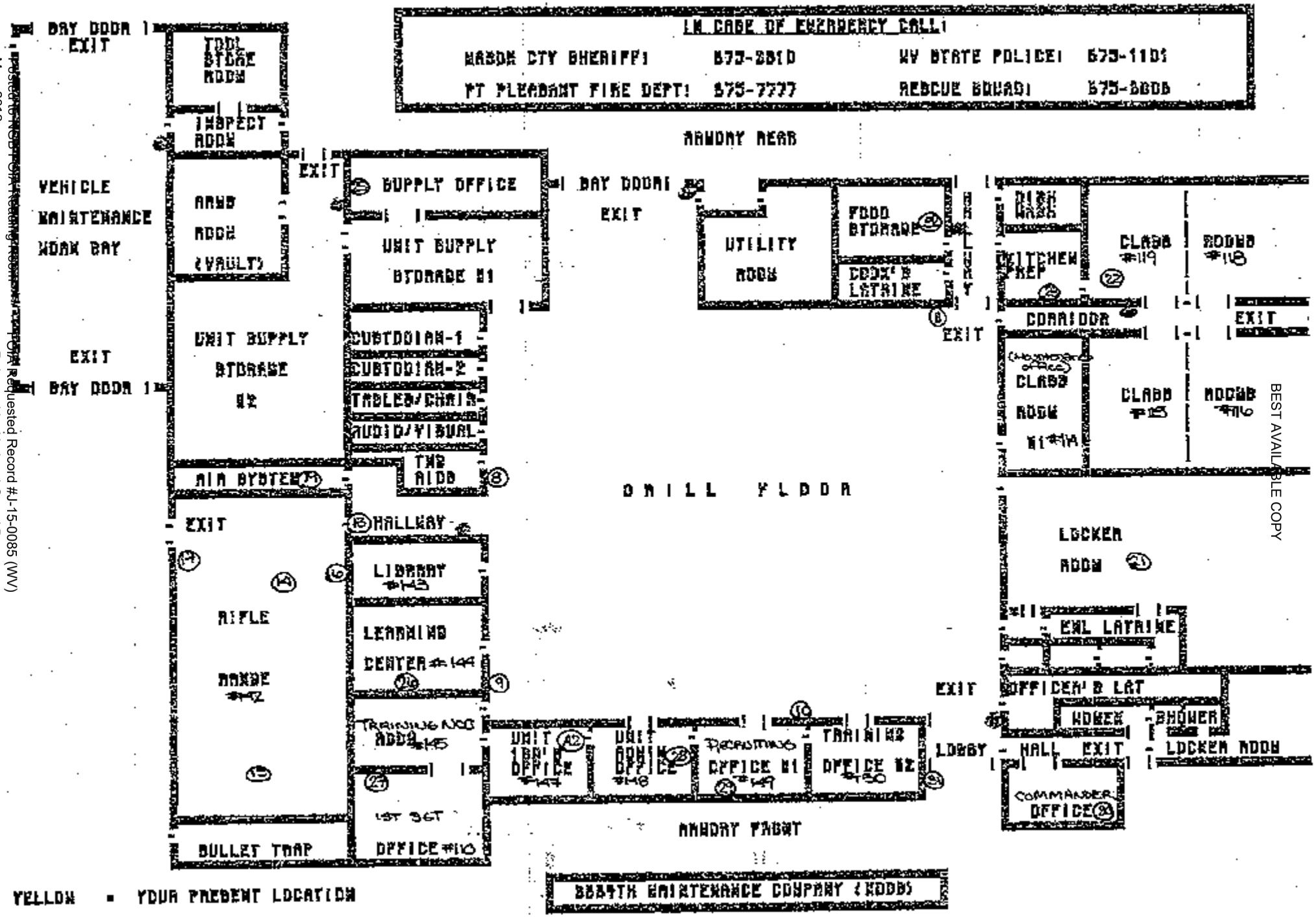
Survey conducted by Non-Responsive Unit displayed at time of survey. Building normally occupied by full time military staff and junior enlisted. In addition, public observed at the facility.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Point Pleasant	**Chain Of Custody:**	119251
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0408473	WVPOI308-7	Furnace	Wipe	****	0.111	67.51	ug/ft²	230	ug/ft²	
0408474	WVPOI308-8	Flame	Wipe	****	0.111	108.01	ug/ft²	770	ug/ft²	
0408475	WVPOI308-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	ug/ft²	
0408476	WVPOI308-10	Flame	Wipe	****	0.111	108.01	ug/ft²	300	ug/ft²	
0408477	WVPOI308-11	Flame	Wipe	****	0.111	108.01	ug/ft²	610	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: Non-Responsive

Technical Manager: Non-Responsive

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:**	WVPOI308	**Chain Of Custody:**	121263
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Point Pleasant	**Date Analyzed:**	12/29/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	29-Dec-03

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
0413595	WVPOI308-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413596	WVPOI308-13	Flame	Wipe	****	0.111	108.01	ug/ft²	17000	ug/ft²	
0413597	WVPOI308-14	Flame	Wipe	****	0.111	108.01	ug/ft²	9800	ug/ft²	
0413598	WVPOI308-15	Flame	Wipe	****	0.111	108.01	ug/ft²	320000	ug/ft²	
0413599	WVPOI308-16	Flame	Wipe	****	0.111	108.01	ug/ft²	11000	ug/ft²	
0413600	WVPOI308-17	Flame	Wipe	****	0.111	108.01	ug/ft²	22000	ug/ft²	
0413601	WVPOI308-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413602	WVPOI308-19	Flame	Wipe	****	0.111	108.01	ug/ft²	7600	ug/ft²	
0413603	WVPOI308-20	Flame	Wipe	****	0.111	108.01	ug/ft²	730	ug/ft²	
0413604	WVPOI308-21	Flame	Wipe	****	0.111	108.01	ug/ft²	1300	ug/ft²	
0413605	WVPOI308-22	Flame	Wipe	****	0.111	108.01	ug/ft²	1300	ug/ft²	
0413606	WVPOI308-23	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0413607	WVPOI308-24	Furnace	Wipe Blank	****	N/A	0.30	ug	0.31	ug	
0413608	WVPOI308-25	Flame	Wipe	****	0.111	108.01	ug/ft²	2500	ug/ft²	
0413609	WVPOI308-26	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0413610	WVPOI308-27	Flame	Wipe	****	0.111	108.01	ug/ft²	710	ug/ft²	
0413611	WVPOI308-28	Flame	Wipe	****	0.111	108.01	ug/ft²	1200	ug/ft²	
0413612	WVPOI308-29	Flame	Wipe	****	0.111	108.01	ug/ft²	680	ug/ft²	
0413613	WVPOI308-30	Furnace	Wipe Blank	****	N/A	0.30	ug	0.3	ug	
0413614	WVPOI308-31	Flame	Wipe	****	0.111	108.01	ug/ft²	2500	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVPOI308	**Chain Of Custody:**	121263
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Point Pleasant	**Date Analyzed:**	12/29/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	29-Dec-03
Attention:	Non-Responsi				

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
0413615	WVPOI308-32	Furnace	Wipe	****	0.111	6.75	ug/ft^2	33	ug/ft^2	

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: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory	**Location:**	Point Pleasant
	Date:	11/4/2003

Sample 1

Sample Number: WVPOI308-A1

	Pump: 657615	
	Pre Flow Rate	**Post Flow Rate**
	2.575	2.49
	2.572	2.505
	2.572	2.508
	2.569	2.504
Average	**2.572**	**2.502**

Average Pre and Post	**2.5369**
Time 1	13:28
Time 2	15:45
Total Time Sampled	**2:17**
Minutes Sampled	137.00
Volume	**347.55 Liters**

Sample 2

Sample Number: WVPOI308-A2

	Pump: 648339	
	Pre Flow Rate	**Post Flow Rate**
	2.526	2.478
	2.523	2.495
	2.523	2.502
	2.513	2.49
Average	**2.521**	**2.491**

Average Pre and Post	**2.5063**
Time 1	13:30
Time 2	15:45
Total Time Sampled	**2:15**
Minutes Sampled	135.00
Volume	**338.34 Liters**

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 15 July 2004

MEMORANDUM FOR WVARNG, Richwood Readiness Center, 20 B. Avenue Riverside Add, Richwood, WV 26261

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive

Regional Industrial Hygienist

Encl

CF: OHM, MAJ Non-Responsive

National Guard Armory
Richwood Readiness Center
Richwood, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Material suspected of containing asbestos was observed (floor tiles). It is recommended that an operations and maintenance plan be followed when performing any activities that may disturb the suspected asbestos-containing materials. **RAC - 5**
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The sources of the water damage should be confirmed and actions taken to eliminate the sources or confirm the sources have been eliminated in order to prevent the possibility of mold growth that may lead to indoor air quality problems. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap, light fixtures, and heaters due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible. **RAC - 3**

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Richwood Readiness Center – Richwood, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Richwood Readiness Center – Richwood, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

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List of Tables

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Richwood Readiness Center in Richwood, West Virginia. Non-Responsiv Non-Responsiv performed the evaluation on 05 December 2003. The point of contact at the readiness center was acting caretaker Non-Responsive. The military unit, as well as the facility's caretaker, was deployed on the date of the survey; therefore no military personnel were present.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Indoor Air Quality

- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Material suspected of containing asbestos was observed (floor tiles). It is recommended that an operations and maintenance plan be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The sources of the water damage should be confirmed and actions taken to eliminate the sources or confirm the sources have been eliminated in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap, light fixtures, and heaters due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Richwood Readiness Center in Richwood, West Virginia. Non-Responsiv Non-R I performed the evaluation on 05 December 2003. The point of contact at the readiness center was acting caretaker Non-Responsive The military unit, as well as the facility's caretaker, was deployed on the date of the survey; therefore no military personnel were present.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any results above acceptable levels from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary. Since results were below acceptable levels from the drill/assembly hall, the other samples were not submitted for analysis.

However, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (recruiter's office and CDR room). Pease note, the military unit was deployed on the date of the survey; therefore, no military personnel were present to sample. The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing material was floor tiles. Floor tiles were observed in the main hallway, lobby, classrooms, and kitchen (approximately 3166 square feet). The condition of the floor tiles was considered good.

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. No mold was observed, however, the inspection revealed water damage on the ceilings in the enlisted men's latrine (plaster damage), kitchen, and supply room. Water damage was also observed on the wall above the doorway between the enlisted men's latrine and the locker room (water streaks).

The source of the water damage was likely roof leaks. Please note that the caretaker stated that the sources of water have been fixed and the damage is old. The sources of the water damage should be confirmed and actions taken to eliminate the sources or confirm the sources have been eliminated in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

2.3.2 Indoor Air Quality

Interviews with the acting caretaker and measurements for carbon dioxide, humidity, and temperature revealed no indoor air quality concerns at the armory. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most of the locations measured, including the CDR room, recruiter's office, enlisted men's latrine, officer's latrine, and supply room (office area).

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The space was converted into a storage room. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 15 micrograms lead per square foot ($\mu g/ft^2$):
- floor at 170 $\mu g/ft^2$;
- stored item (table top) at 20 $\mu g/ft^2$;

- overhead heater at 8900 µg/ft^2,
- light fixture at 100000 µg/ft^2; and
- bullet trap at 4100 µg/ft^2.

The lead levels at three of these locations were above the recommended level of 200 µg/ft^2, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the bullet trap, light fixtures, and heaters due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be improved to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, housekeeping, visible mold, indoor air quality, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Richwood, West Virginia
Date of Sampling: 05 December 2003

Sample Number	Location	Results, µg/ft² [a]
WVRIC339-1	Assembly room – electrical control box top surface (See Building Layout Appendix B)	20
WVRIC339-2	Assembly room - serving counter top surface (See Building Layout Appendix B)	6
WVRIC339-3	Assembly room - table top (See Building Layout Appendix B)	5.5
WVRIC339-4	Assembly room fan stand (See Building Layout – Appendix B)	50
WVRIC339-5	Assembly room vending machine top surface (See Building Layout - Appendix B)	37
WVRIC339-6	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Richwood, West Virginia
Date of Sampling: 05 December 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVRIC339-A1	Recruiter's Office	1152-1355/123	2.4366	299.7	<0.003
WVRIC339-A2	CDR Room	1153-1355/122	2.433	296.83	<0.003
WVRIC339-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Richwood, West Virginia
Date of Sampling: 05 December 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor PLT Room	3	659	34.0	68.2
Outdoors	-	531	45.3	45.1

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Richwood, West Virginia

Date of Sampling: 05 December 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
CDR Room	31.1-64.8	70	No
Recruiter's Office	27.6-54.8	70	No
Enlisted Men's Latrine	4.51-13.8	40	No
Officer's Latrine	4.76-12.6	40	No
Main Hallway	4.99-15.79	7.5	Some Areas
Supply Room (office area)	7.0-32.8	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Richwood, West Virginia

Date of Sampling: 05 December 2003

Sample Number	Location	Results, µg/ft² [a]
WVRIC339-7	Outside the range	15
WVRIC339-8	Floor	170
WVRIC339-9	Stored Item (filing cabinet top surface)	20
WVRIC339-10	Overhead Heater	8900
WVRIC339-11	Light Fixture	100000
WVRIC339-12	Field Blank	< 0.3 µg
WVRIC339-13	Bullet Trap	4100

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Richwood West Virginia ARNB	Richwood

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
05 December 2008	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive : SGT

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304-846-6621	Det 1 CoA 1092nd ECB	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1	3	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D Uncontrolled Dermal
7439-92-1	Lead, Inorganic dusts & fumes, as Pb	2 moderate	C Uncontrolled Respiratory
1332-21-4	Asbestos (fibers)	↓	↓

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAILABLE	MIL
					CIV
					↓

SECTION 6. COMMENTS

___No comments See attached sheet

Non-Responsive conducted survey. Building contains (1) civilian caretaker and 3 military full time staff. Military staff perform mainly, administrative functions. Please note that on date of survey, unit was deployed including Caretaker therefore, acting caretaker served as caretaker

PRIVACY ACT STATEMENT

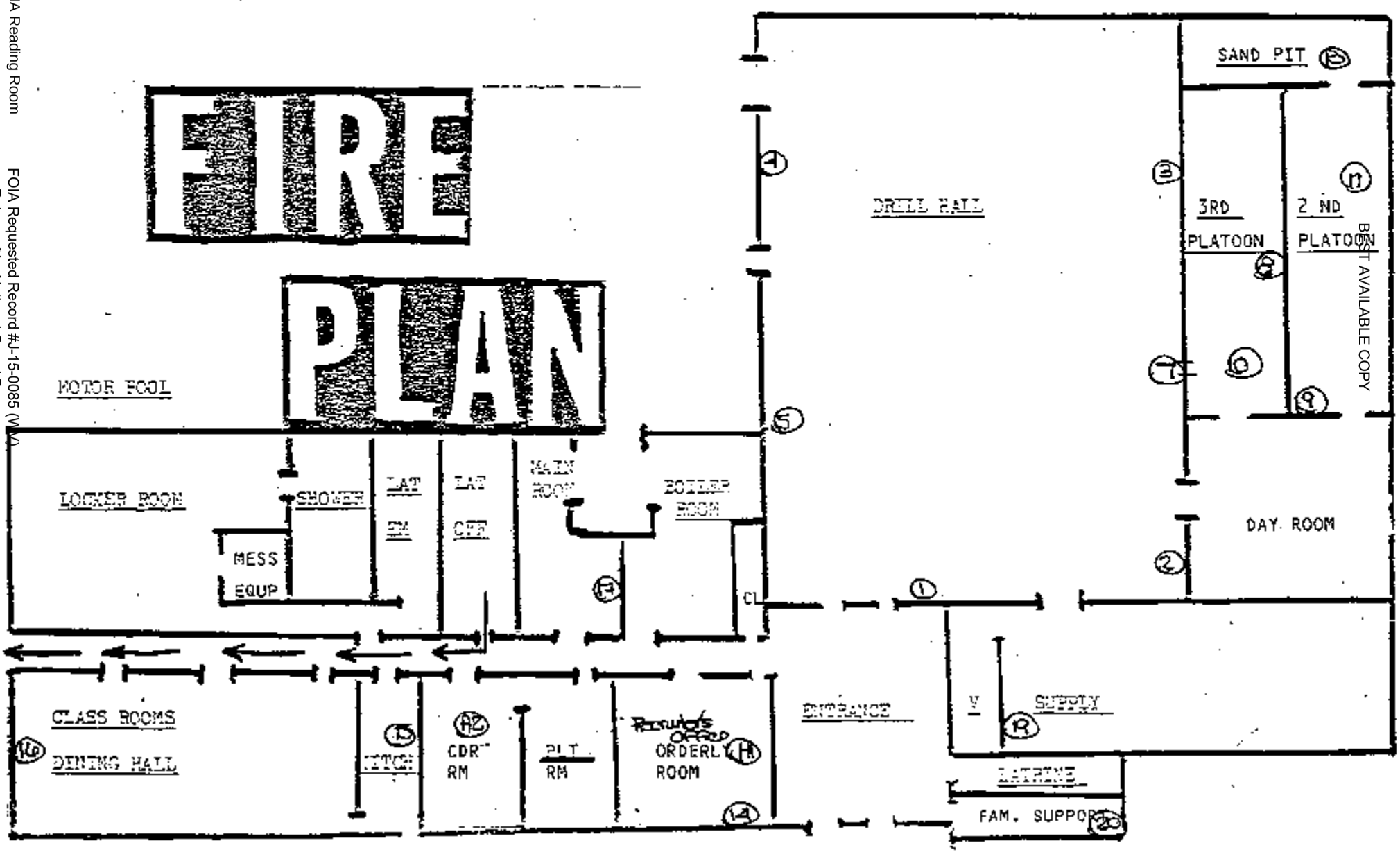
Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout

RICHWOOD ARMORY

FIRE PLAN



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVRIC339	**Chain Of Custody:**	121260
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Richwood, WV	**Date Analyzed:**	12/22/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	22-Dec-03

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
0413576	WVRIC339-1	Furnace	Wipe	****	0.111	2.70	ug/ft^2	20	ug/ft^2	
0413577	WVRIC339-2	Furnace	Wipe	****	0.111	2.70	ug/ft^2	6	ug/ft^2	
0413578	WVRIC339-3	Furnace	Wipe	****	0.111	2.70	ug/ft^2	5.5	ug/ft^2	
0413579	WVRIC339-4	Furnace	Wipe	****	0.111	13.50	ug/ft^2	50	ug/ft^2	
0413580	WVRIC339-5	Furnace	Wipe	****	0.111	6.75	ug/ft^2	37	ug/ft^2	
0413581	WVRIC339-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413582	WVRIC339-7	Furnace	Wipe	****	0.111	2.70	ug/ft^2	15	ug/ft^2	
0413583	WVRIC339-8	Furnace	Wipe	****	0.111	67.51	ug/ft^2	170	ug/ft^2	
0413584	WVRIC339-9	Furnace	Wipe	****	0.111	2.70	ug/ft^2	20	ug/ft^2	
0413585	WVRIC339-10	Flame	Wipe	****	0.111	108.01	ug/ft^2	8900	ug/ft^2	
0413586	WVRIC339-11	Flame	Wipe	****	0.111	108.01	ug/ft^2	100000	ug/ft^2	
0413587	WVRIC339-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413588	WVRIC339-13	Flame	Wipe	****	0.111	108.01	ug/ft^2	4100	ug/ft^2	

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:**	WVRIC339	**Chain Of Custody:**	121260
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Richwood, WV	**Date Analyzed:**	12/22/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	22-Dec-03

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

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

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

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAPOR329-A1 through WVWIL335-A3
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-6027
DCL Sample ID No.:	03-35454 through 03-35502
Sample Receipt Date:	12/11/2003
Preparation Date:	12/15/03
Analysis Date:	12/15/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-6071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VAPOR329-A1	03-35454	362.12	ND	<0.003
VAPOR329-A2	03-35455	355.29	ND	<0.003
VAPOR329-A3	03-35456	0	ND	-
VAVIR329-A1	03-35462	241.75	ND	<0.004
VAVIR329-A2	03-35463	239.35	ND	<0.004
VAVIR329-A3	03-35464	0	ND	-
WVWAL338-A1	03-35466	255.30	ND	<0.004
WVWAL338-A2	03-35467	246.10	ND	<0.004
WVWAL338-A3	03-35468	0	ND	-
WVBLU338-A1	03-35470	340.39	ND	<0.003
WVBLU338-A2	03-35471	326.60	ND	<0.003
WVBLU338-A3	03-35472	0	ND	-
VAGAT337-A1	03-35473	243.02	ND	<0.004
VAGAT337-A2	03-35474	254.11	ND	<0.004
VAGAT337-A3	03-35475	0	ND	-
VAHAM330-A1	03-35476	250.47	ND	<0.004
VAHAM330-A2	03-35477	255.99	ND	<0.004
VAHAM330-A3	03-35478	0	ND	-
VABIG336-A1	03-35479	343.24	ND	<0.003
VABIG336-A2	03-35480	307.31	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		96.	
% Recovery	LCS 2		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
VABIG336-A3	03-35481	0	ND	-
WVHIN339-A1	03-35486	238.94	ND	<0.004
WVHIN339-A2	03-35487	237.41	ND	<0.004
WVHIN339-A3	03-35488	0	ND	-
WVMON335-A1	03-35489	283.66	ND	<0.004
WVMON335-A2	03-35490	288.02	ND	<0.003
WVMON335-A3	03-35491	0	ND	-
WVRIC339-A1	03-35495	299.70	ND	<0.003
WVRIC339-A2	03-35496	296.83	ND	<0.003
WVRIC339-A3	03-35497	0	ND	-
VACED337-A1	03-35498	243.02	ND	<0.004
VACED337-A2	03-35499	254.11	ND	<0.004
VACED337-A3	03-35500	0	ND	-
WVWIL335-A1	03-35501	247.64	ND	<0.004
WVWIL335-A2	03-35502	0	ND	-
WVWIL335-A3	03-35503	252.18	ND	<0.004
	Prep Blank		ND	
% Recovery	LCS 3		101.	
% Recovery	LCS 4		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Elkins
Date: 12/05/2003

Sample 1

Sample Number: WVRIC339-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.427	2.443
	2.433	2.441
	2.44	2.441
	2.434	2.434
Average	**2.434**	**2.440**

Average Pre and Post **2.4366**

Time 1	11:52
Time 2	13:55
Total Time Sampled	**2:03**
Minutes Sampled	123.00

Volume **299.70 Liters**

Sample 2

Sample Number: WVRIC339-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.43	2.449
	2.443	2.429
	2.436	2.421
	2.441	2.415
Average	**2.438**	**2.429**

Average Pre and Post **2.4330**

Time 1	11:53
Time 2	13:55
Total Time Sampled	**2:02**
Minutes Sampled	122.00

Volume **296.83 Liters**

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 07 July 2004

MEMORANDUM FOR WVARNG, Ronceverte/Clifford Readiness Center, ATTN: SGT Non-Responsive 301 E. Edgar Avenue, Ronceverte, WV 24970-9999

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive

Encl

Regional Industrial Hygienist

CF: OHM, MAJ Non-Responsive

National Guard Armory
Ronceverte Readiness Center
Ronceverte, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that this surface and the areas immediately around this surface be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned. **RAC - 4**
- Wipe sampling for lead revealed a concentration above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, classroom, second floor office area, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Material (floor tiles) suspected of containing asbestos were observed. Sampling revealed that the floor tiles did contain asbestos. The tile at the door stop in the classroom was damaged and should be replaced. In addition, an operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials. **RAC - 4**
- Water damage was observed at the armory. The source of the water damage was likely from window leaks (in the drill hall) and a roof leak (in the locker room). The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems. **RAC - 5**
- Visual mold was observed on the classroom windows. The source of the mold was likely from condensation. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be confirmed and actions taken to eliminate it. **RAC - 5**

- Measurements for temperature revealed that levels were slightly above the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used to decrease the temperature at specific locations. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore, consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible. **RAC - 4**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE	OTSG APPROVED (Date)
WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD	

DIRECTORATE Ronceverte Armory BLDG/ROOM Ronceverte
SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study
JOB DESCRIPTION/SERIES Military/Administrative Operations
SAMPLING DATE November 21, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.003	<0.003	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive ndustrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility)				
NAME: Non-Responsive 11/21/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: (Last Four # Non-R		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-647-4233		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 1 MAY 71 4700

HSXR-APG-Z OP 32 1 Jan 90

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

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COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive ndustrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (*For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility)*

NAME: Non-Responsive 11/21/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: [redacted]		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-647-4233		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 1 MAY 78 4700

HSXR-APG-Z OP 32 1 Jan 90

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Ronceverte Readiness Center – Ronceverte, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

20 February 2004

National Guard Armory
Ronceverte Readiness Center – Ronceverte, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Ronceverte Readiness Center in Ronceverte, West Virginia. Non-Responsi Non-Responsi performed the evaluation on 21 November 2003. The point of contact at the readiness center was SGT Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that this surface and the areas immediately around this surface be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed a concentration above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, classroom, second floor office area, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Material (floor tiles) suspected of containing asbestos were observed. Sampling revealed that the floor tiles did contain asbestos. The tile at the door stop in the classroom was damaged and should be replaced. In addition, an operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from window leaks (in the drill hall) and a roof leak (in the locker room). The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Visual mold was observed on the classroom windows. The source of the mold was likely from condensation. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be confirmed and actions taken to eliminate it.
- Measurements for temperature revealed that levels were slightly above the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 74 degrees Fahrenheit in the winter. If possible, the heating

units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used to decrease the temperature at specific locations.

- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore, consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Ronceverte Readiness Center in Ronceverte, West Virginia. Non-Responsi performed the evaluation on 21 November 2003. The point of contact at the readiness center was SGT Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at one location. The sample collected from the assembly hall (control box top surface) had a lead concentration of 210 $\mu g/ft^2$. It is recommended that this surface and the immediate area around the surface be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, classroom, second floor office area, and converted firing range.

Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory on the drill hall wall and on the ceiling of the second floor locker room. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that lead concentrations at all locations were below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles in the second floor classroom and on the stairs and stair landings leading to the second floor (approximately 2249 square feet). The condition of the floor tiles on the stairs, stairs landings, and the majority of the classrooms floor was considered good; however a tile at the door stop in the classroom was damaged. A bulk sample of the classroom

floor tile was collected. The results revealed asbestos in the form of chrysotile at 1-3 % in the grey compact tile.

The tile at the door stop in the classroom should be replaced. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection -- Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage on the drill hall wall and ceiling of the second floor locker room. Possible mold was observed on the aluminum foil covering the windows in the second floor classrooms.

The source of the water damage was likely from window leaks (in the drill hall) and a roof leak(in the locker room). The source of the possible mold in the classrooms was likely from condensation. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interviews with employees and measurements for carbon dioxide and humidity revealed no indoor air quality concerns. However, measurements for temperature

revealed that levels were slightly above the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes to decrease the temperature at specific locations. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the training office, ladies latrine, dressing room/men's latrine, and classrooms. Please note that the lighting in the Commander's office did not meet the minimum requirements; however additional lighting meeting minimum requirements is provided at the desk in the office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The bullet trap in the only remnant of the former firing range; the former firing range consisted of a portion of the drill hall floor and the bullet trap. The bullet trap was located in the drill hall wall. The converted firing range is now used as part of the drill floor. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- bullet trap at 590 micrograms lead per square foot ($\mu g/ft^2$);
- light fixture at 46000 $\mu g/ft^2$; and
- floor at 11 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should

not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, housekeeping, ergonomic concerns, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, visible mold, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Ronceverte, West Virginia
Date of Sampling: 21 November 2003

Sample Number	Location	Results,µg/ft² [a]
WVRON325-1	Assembly room -- table top (See Building Layout -- Appendix B)	6.4
WVRON325-2	Assembly room - control box top surface (See Building Layout Appendix B)	210
WVRON325-3	Assembly room - window sill adjacent to bleacher (See Building Layout - Appendix B)	19
WVRON325-4	Assembly room – wooden sill attached to wall (See Building Layout - Appendix B)	42
WVFA1303-5	Assembly room - window sill adjacent to bullet trap (See Building Layout – Appendix B)	7.9
WVRON325-6	Field Blank	< 0.3 µg
WVRON325-10	First Floor – Orderly Room -- heater top surface	33
WVRON325-11	First Floor Training Office computer monitor top surface	8.1
WVRON325-12	Field Blank	< 0.3 µg
WVRON325-13	First Floor - Hallway -- counter top surface	10
WVRON325-14	First Floor Concession Stand - refrigerator top surface	5
WVRON325-15	First Floor – Kitchen - paper towel dispenser top surface	< 2.7
WVRON325-16	First Floor – Gym – counter top	5.4
WVRON325-17	Second Floor Classroom -- window sill	53
WVRON325-18	Field Blank	< 0.3 µg
WVRON325-19	Second Floor - Office Area -- filing cabinet top surface	140

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Ronceverte, West Virginia
Date of Sampling: 21 November 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVRON325-A1	Non-Responsive	0754-1006/132	2.4809	327.48	<0.003
WVRON325-A2		0754-1006/132	2.4453	322.77	<0.003
WVRON325-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Ronceverte, West Virginia
Date of Sampling: 21 November 2003

Sample Number	Location	Results, % By Weight
WVRON325-PC1	Drill hall - wall	0.012
WVRON325-PC2	Classroom window frame	0.046

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4

Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature

National Guard Armory

Ronceverte, West Virginia

Date of Sampling: 21 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor – Drill Hall	1	589	35.5	74.5
2nd Floor - Classroom	1	604	36.2	75.4
Outdoors	-	565	53.4	40.3

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Ronceverte, West Virginia

Date of Sampling: 21 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
First Floor -- Training Office	21.3-47.6	70	No
First Floor – Commander's Office	23.9-48.5	70	No*
First Floor – Ladies Latrine	4.88-20.9	40	No
First Floor -- Kitchen	16.1-74.0	70	Some Areas
First Floor -- Dressing Room/Men's Latrine	12.6-30.5	40	No
Second Floor -- Classrooms	17.9-65.3	70	No

[a] fc – Footcandles

* Additional lighting provided above desk/working area

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from Design Guide DG-415-2, Logistics Facilities, published by the National Guard Bureau Installation Division.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Ronceverte, West Virginia

Date of Sampling: 21 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVRON325-7	Bullet Trap	590
WVRON325-8	Light Fixture	16000
WVRON325-9	Floor	11

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Ronceverte Armory West Virginia ARNG	Ronceverte

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
21 November 2005	Non-Responsive

IACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SGT

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 647 4233	Det. 1 Battery C 1st/201st FA	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1	3	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

IAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
PCVDTXXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
POHEATSTR	Heat Stress	3-low	↓
7439-92-1	Lead Inorganic dust & fumes, as Pb	2-moderate	C Uncontrolled Respiratory
12001-29-5	Asbestos (Chrysotile)	3-low	↓

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive		S	M	Non-Responsive	MIL
		A	↓		↓
		A			CIV
		T			

SECTION 6. COMMENTS

No comments. See attached sheet

Survey conducted by Non-Responsive Building contains 3 (three) full-time military staff and one civilian caretaker. Employees (military) perform mainly administrative functions. Please note that mold was observed in the washrooms on the second floor.

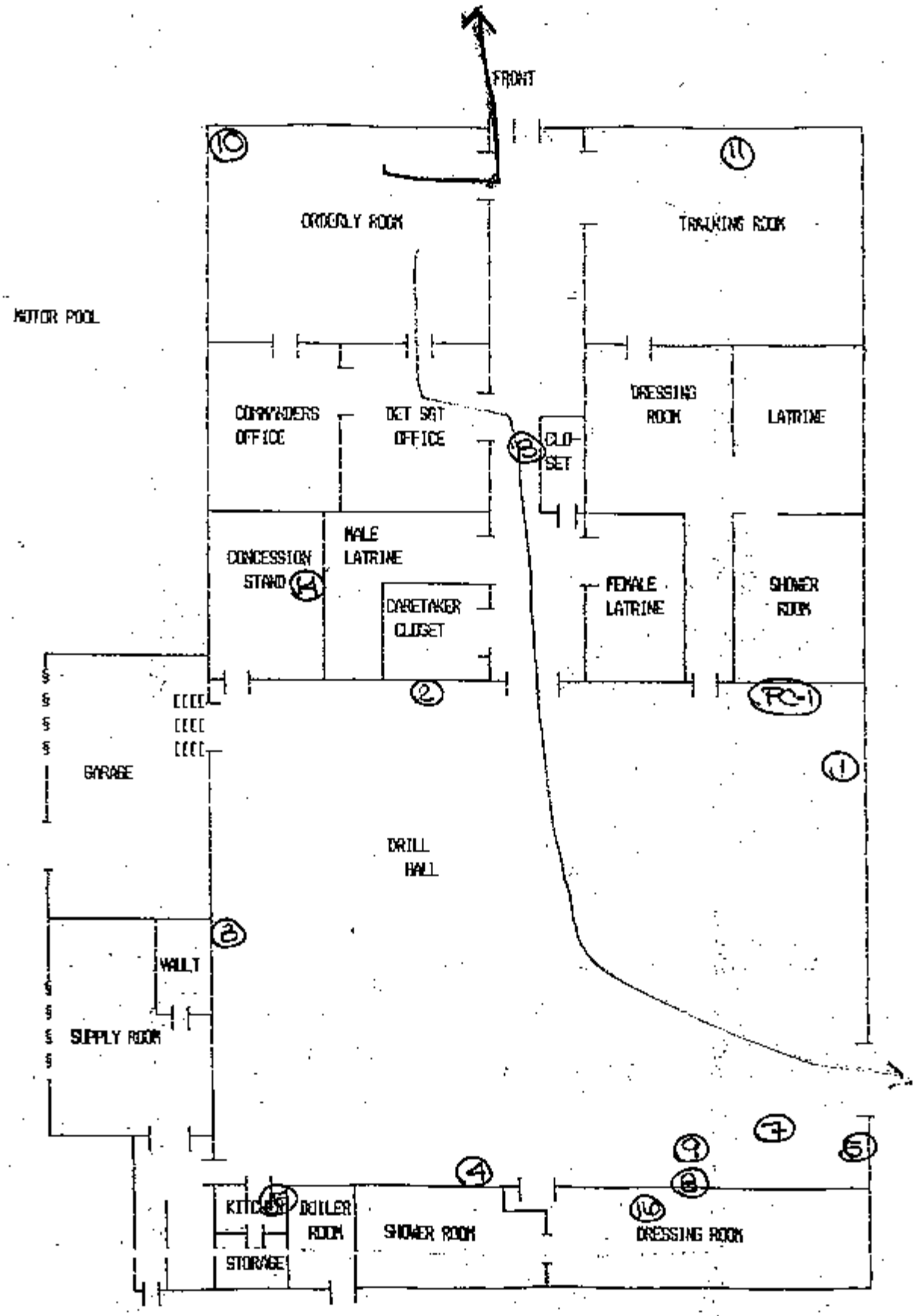
PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout

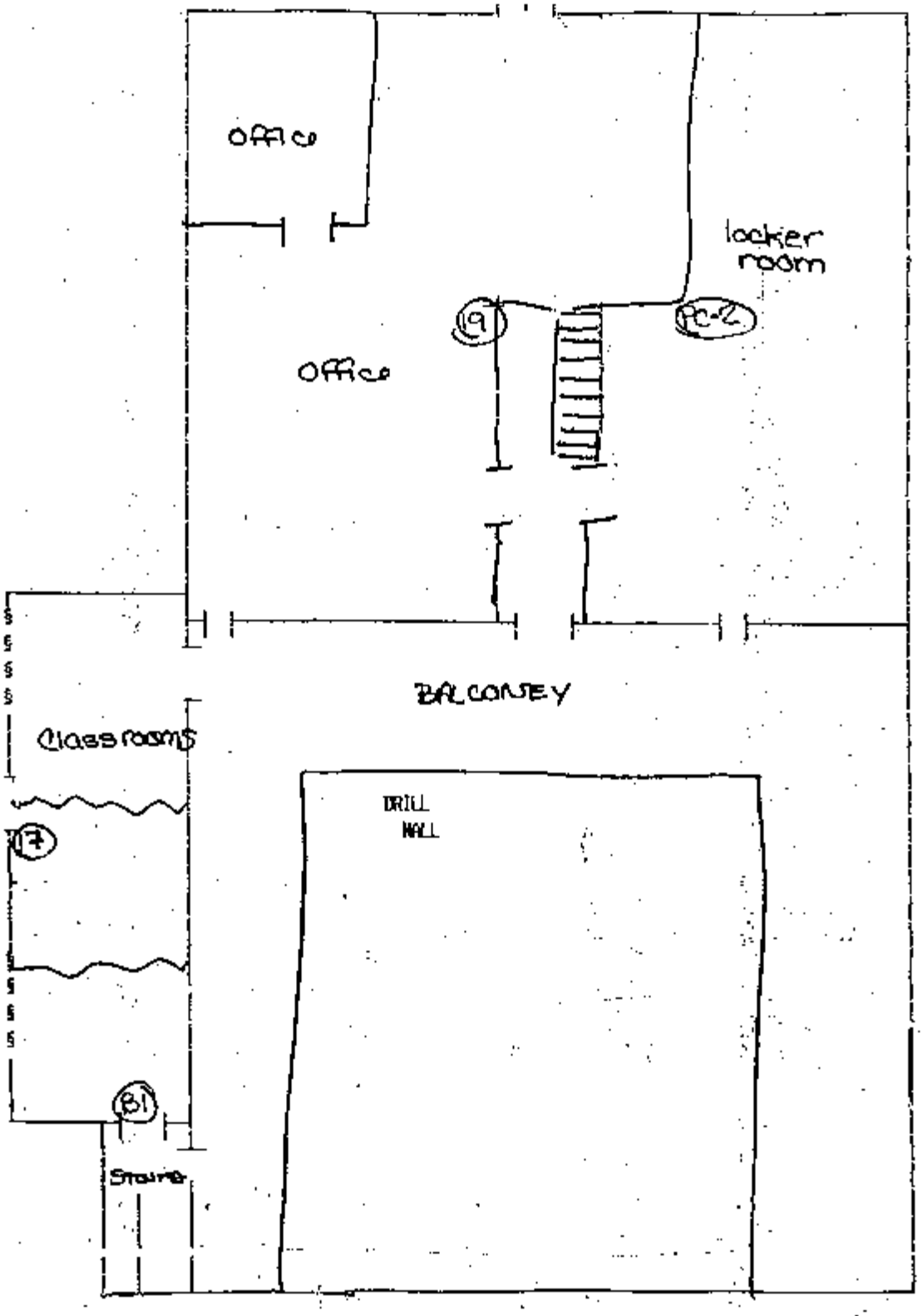
FIRE EVACUATION PLAN



Red = primary

Blue = Alternate

Renovate Armory
2nd Floor



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Roncerert	**Chain Of Custody:**	119409
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	12/04/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	04-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0411122	WVRON325-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	6.4	ug/ft²	
0411123	WVRON325-2	Furnace	Wipe	****	0.111	67.51	ug/ft²	210	ug/ft²	
0411124	WVRON325-3	Furnace	Wipe	****	0.111	2.70	ug/ft²	19	ug/ft²	
0411125	WVRON325-4	Furnace	Wipe	****	0.111	6.75	ug/ft²	42	ug/ft²	
0411126	WVRON325-5	Furnace	Wipe	****	0.111	2.70	ug/ft²	7.9	ug/ft²	
0411127	WVRON325-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0411128	WVRON325-7	Furnace	Wipe	****	0.111	67.51	ug/ft²	590	ug/ft²	
0411129	WVRON325-8	Flame	Wipe	****	0.111	108.01	ug/ft²	46000	ug/ft²	
0411130	WVRON325-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	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: Non-Responsive Technical Manager: Non-Responsive

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:**	WVRON 325	**Chain Of Custody:**	121141
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Roncevert	**Date Analyzed:**	12/16/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Response
		P.O. Number:	1103	**Report Date:**	16-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413446	WVRON325-10	Furnace	Wipe	****	0.111	6.75	ug/ft²	33	ug/ft²	
0413447	WVRON325-11	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.1	ug/ft²	
0413448	WVRON325-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413449	WVRON325-13	Furnace	Wipe	****	0.111	2.70	ug/ft²	10	ug/ft²	
0413450	WVRON325-14	Furnace	Wipe	****	0.111	2.70	ug/ft²	5	ug/ft²	
0413451	WVRON325-15	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0413452	WVRON325-16	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.4	ug/ft²	
0413453	WVRON325-17	Furnace	Wipe	****	0.111	13.50	ug/ft²	53	ug/ft²	
0413454	WVRON325-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413455	WVRON325-19	Furnace	Wipe	****	0.111	33.75	ug/ft²	140	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: Non-Responsive Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVOAK321-A1 through VACLI325-A3
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5799
DCL Sample ID No.:	03-34380 through 03-34414
Sample Receipt Date:	11/25/2003
Preparation Date:	12/02/03
Analysis Date:	12/03/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

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Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVOAK321-A1	03-34380	228.69	ND	<0.004
WVOAK321-A2	03-34381	225.34	ND	<0.004
WVOAK321-A3	03-34382	0	ND	-
WVBEC321-A1	03-34384	305.03	ND	<0.003
WVBEC321-A2	03-34385	301.29	ND	<0.003
WVBEC321-A3	03-34386	0	ND	-
WVDUN323-A1	03-34387	418.71	ND	<0.002
WVDUN323-A2	03-34388	426.37	ND	<0.002
WVDUN323-A3	03-34389	0	ND	-
WV2CH322-A1	03-34390	330.94	ND	<0.003
WV2CH322-A2	03-34391	324.29	ND	<0.003
WV2CH322-A3	03-34392	0	ND	-
WV1CH322-A1	03-34393	316.36	ND	<0.003
WV1CH322-A2	03-34394	312.78	ND	<0.003
WV1CH322-A3	03-34395	0	ND	-
WVSTA323-A1	03-34396	350.61	ND	<0.003
WVSTA323-A2	03-34397	339.14	ND	<0.003
WVSTA323-A3	03-34398	0	ND	-
WVCHA324-A1	03-34400	162.63	ND	<0.006
WVCHA324-A2	03-34401	172.47	ND	<0.006
	Prep Blank		ND	
% Recovery	LCS 1		109.	
% Recovery	LCS 2		111.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVCHA324-A3	03-34402	0	ND	-
WVALL324-A1	03-34403	222.94	ND	<0.004
WVALL324-A2	03-34404	219.24	ND	<0.005
WVALL324-A3	03-34405	0	ND	-
WVRON325-A1	03-34406	327.48	ND	<0.003
WVRON325-A2	03-34407	322.77	ND	<0.003
WVRON325-A3	03-34408	0	ND	-
VACLI325-A1	03-34412	390.23	ND	<0.003
VACLI325-A2	03-34413	405.99	ND	<0.002
VACLI325-A3	03-34414	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 3		107.	
% Recovery	LCS 4		105.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Ronceverte
Date: 11/21/2003

Sample 1

Sample Number: WVRON325-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.504	2.458
	2.500	2.449
	2.502	2.449
	2.500	2.485
Average	**2.502**	**2.460**

Average Pre and Post **2.4809**

Time 1	7:54
Time 2	10:06
Total Time Sampled	**2:12**
Minutes Sampled	132.00

Volume **327.48 Liters**

Sample 2

Sample Number: WVRON325-A2
Pump: 646339

	Pre Flow Rate	Post Flow Rate
	2.441	2.445
	2.442	2.482
	2.437	2.446
	2.429	2.44
Average	**2.437**	**2.453**

Average Pre and Post **2.4453**

Time 1	7:54
Time 2	10:06
Total Time Sampled	**2:12**
Minutes Sampled	132.00

Volume **322.77 Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVOAK321-PC1 through WVRON325-PC2
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5799
DCL Sample ID No.:	03-34383 through 03-34410
Sample Receipt Date:	11/25/2003
Preparation Date:	12/1/2003
Analysis Date:	12/1/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive

Analyst

Non-Responsive

Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVOAK321-PC1	03-34383	480.	0.048
WVRON325-PC1	03-34409	120.	0.012
WVRON325-PC2	03-34410	460.	0.046
	Prep Blank	ND	
% Recovery	LCS	87.	
% Recovery	34307MS	NA	
% Recovery	34307MSD	NA	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.
NA indicates the sample result was greater than four times the spiked amount.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:
Non-Responsive

Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	WVSTA323-B1 through WVRON325-B1
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-5799
DCL Sample ID No.:	03-34399 through 03-34411
Sample Receipt Date:	11/25/03
Analysis Date:	11/26/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive
Analyst

Non-Responsive
Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

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11/26/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: Various / WV
Set ID: 03-A-5799

Client Sample ID:	WVSTA323-B1	WVRON325-B1	WVRON325-B1	WVRON325-B1
DCL Sample ID:	03-34399	03-34411A	03-34411B	03-34411C
Macroscopic Examination				
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Layered	Layered	Layered
Color:	Grey	Grey	Black	Grey
Texture:	Crmby/Fbrs	Compact	Resinous	Crumbly
Description:	Material	Tile	Mastic	Material
Analysis:	PLM	PLM	PLM	PLM
Asbestiform Minerals				
% Chrysotile:	>20≤30	>1≤3	Trace	>1≤3
% Amosite:				
% Crocidolite:				
% Tremolite - Actinolite:				
% Anthophyllite:				
% Total Asbestos:	**>20≤30**	**>1≤3**	**Trace**	**>1≤3**
Other Materials				
% Cellulose:			>1≤3	>1≤3
% Fiberglass:	>10≤20			
% Other Fibers:				
% Resin/Binder:		>10≤20	>70≤80	
% Non Fibrous:	>40≤50	>70≤80	>10≤20	>90≤100

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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Shaw® Shaw Environmental, Inc.

National Guard Armory
Underwood Readiness Center – Salem, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

26 May 2004

National Guard Armory
Underwood Readiness Center – Salem, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

26 May 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Underwood Readiness Center in Salem, West Virginia. Non-Responsive performed the evaluation on 30 October 2003. The point of contact at the readiness center was caretake Non-Responsive The military unit was deployed on the date of the survey; therefore no military personnel were present.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Housekeeping
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources

- Noise Exposure
- Converted Indoor Firing Range
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. Sampling revealed that the floor tiles did contain asbestos. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- Measurements for temperature revealed that levels were below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific locations.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

Interviews with employees concerning ergonomic concerns were not conducted. The unit was deployed on the date of the survey; therefore no military personnel were present.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Underwood Readiness Center in Salem, West Virginia. Non-Responsive performed the evaluation on 30 October 2003. The point of contact at the readiness center was caretaker Non-Responsive The military unit was deployed on the date of the survey; therefore no military personnel were present.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary.

However, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (1st SGT's office and supply storage at the converted firing range's former bullet trap). Pease note, the military unit was deployed on the date of the survey; therefore no military personnel were present. The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled: therefore, no actions are necessary

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory on the dressing room ceiling, enlisted men's locker room overhead pipe, and men's latrine overhead pipe. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that lead concentrations at all locations were below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles in the main hallway, classroom, kitchen, four front offices, lobby, concession stand, and hallway adjacent to the dressing room (approximately square 4269.25 feet). The condition of the floor tiles in all the rooms was considered good, except in the lobby. A tile in the lobby was broken; therefore a bulk sample of a floor tile was collected. The results revealed asbestos in the form of chrysotile at 1-3 % in the red/black compact/resinous tile mastic.

In addition, suspected asbestos containing material in the form of pipe insulation was observed in the boiler room in approximately twenty-two pipe joints or elbows. It is

assumed that asbestos containing insulation is in the pipe joints/elbows throughout the facility. The condition of the pipe insulation materials was considered good (no rips, tears, or other damage).

An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage and possible mold on the ceiling of the dressing room.

The source of the water damage was likely from roof leaks. The water damage in the dressing room has been fixed, however, the ceiling remains discolored. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees were not conducted. The unit was deployed on the date of the survey; therefore no military personnel were present.

2.3.2 Indoor Air Quality

Measurements for temperature revealed that levels were below the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended

range of 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter. If possible, the heating units should be adjusted so the temperature will fall within the acceptable range. In addition, space heaters could be used to increase the temperature at specific locations. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the supply room (office area), office #1, office #2, day room/gym, and women's latrine.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The bullet trap in the only remnant of the former firing range; the former firing range consisted of a portion of the drill hall floor and the bullet trap. The bullet trap space was converted into a storage room. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 9.7 micrograms lead per square foot ($\mu g/ft^2$);
- floor in the office area at 17 $\mu g/ft^2$;
- stored item (flammable cabinet top surface) at 22 $\mu g/ft^2$; and
- light fixture at 3.1 $\mu g/ft^2$.

The lead levels at all of these locations were below the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army); therefore, no actions are necessary.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, HVAC systems, and surface lead contamination in the converted firing range.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, visible mold, indoor air quality, and lighting,. These concerns are discussed in detail in Section 2.0 of this report.

Interviews with employees concerning ergonomic concerns were not conducted. The unit was deployed on the date of the survey; therefore no military personnel were present.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Salem, West Virginia
Date of Sampling: 30 October 2003

Sample Number	Location	Results, µg/ft² [a]
WVSAL303-7	Assembly room - - serving counter top (See Building Layout Appendix B)	9
WVSAL303-8	Assembly room – power box top surface (See Building Layout Appendix B)	110
WVSAL303-9	Assembly room – bleacher (See Building Layout - - Appendix B)	24
WVSAL303-10	Assembly room – control system box top surface (See Building Layout Appendix B)	60
WVSAL303-11	Assembly room bleacher (See Building Layout - - Appendix B)	21
WVSAL303-12	Field Blank	0.34 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Salem, West Virginia
Date of Sampling: 30 October 2003

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVSAL303-A1	1st SGT Office	0801-1018/137	2.5114	344.06	<0.003
WVSAL303-A2	Supply Storage Room	0802-1017/135	2.4769	334.38	<0.003
WVSAL303-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

General samples were taken because there were no full-time military employees at the armory on the date of the survey. The unit was deployed on the date of the survey.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Salem, West Virginia
Date of Sampling: 30 October 2003

Sample Number	Location	Results, % By Weight
WVSAL303-PC1	Men's Latrine – pipe	0.090
WVSAL303-PC2	Dressing Room ceiling	0.025
WVSAL303-PC3	Enlisted Men's Locker Room - pipe	0.12

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4

Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature

National Guard Armory

Salem, West Virginia

Date of Sampling: 30 October 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Classroom	2	692	50.1	64.0
Outdoors	-	469	24.5	76.1

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Salem, West Virginia

Date of Sampling: 30 October 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Supply Room (office area)	16.4-54.3	70	No
Office #1	20.1-37.6	70	No
Office #3	15.4-37.3	70	No
Day Room/Gym	10.1-33.6	70	No
Storage Room (former bullet trap)	4.8-203.1	30	Some areas
Main hallway	11.1-21.3	7.5	Yes
Women's latrine	7.8-15.4	40	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Salem, West Virginia

Date of Sampling: 30 October 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVWES302-13	Floor Outside of Range	9.7
WVWES302-14	Floor	17
WVWES302-15	Stored Item - trunk top surface	22
WVWES302-16	Light Fixture	3.1

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Underwood Armory West Virginia ARNG	Salem

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Ops / ADO

URVEY DATE	EVALUATOR (Initials)
30 Oct 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304-788-2421		4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	2	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXX	Video display terminal	3-low	D Uncontrolled Physical
7439-92-1	Lead, Inorganic dust/Fumes, as Pb	2-mod.	C Uncontrolled Respirator
1332-21-4	Asbestos (other)	2-mod.	C Uncontrolled Respirator
12001-29-5	Asbestos (Chrysotile)	3-low	C Uncontrolled Respirator X

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAILABLE	MIL
			↓	↓	↓
			↓	↓	CIV

SECTION 6. COMMENTS

____No comments See attached sheet

Survey was conducted by Non-Responsive, Building contains 2 GTUs military full time employees and 1 civilian caretaker. Military employee perform mainly administrative functions. Note unit deployed on date of survey.

PRIVACY ACT STATEMENT

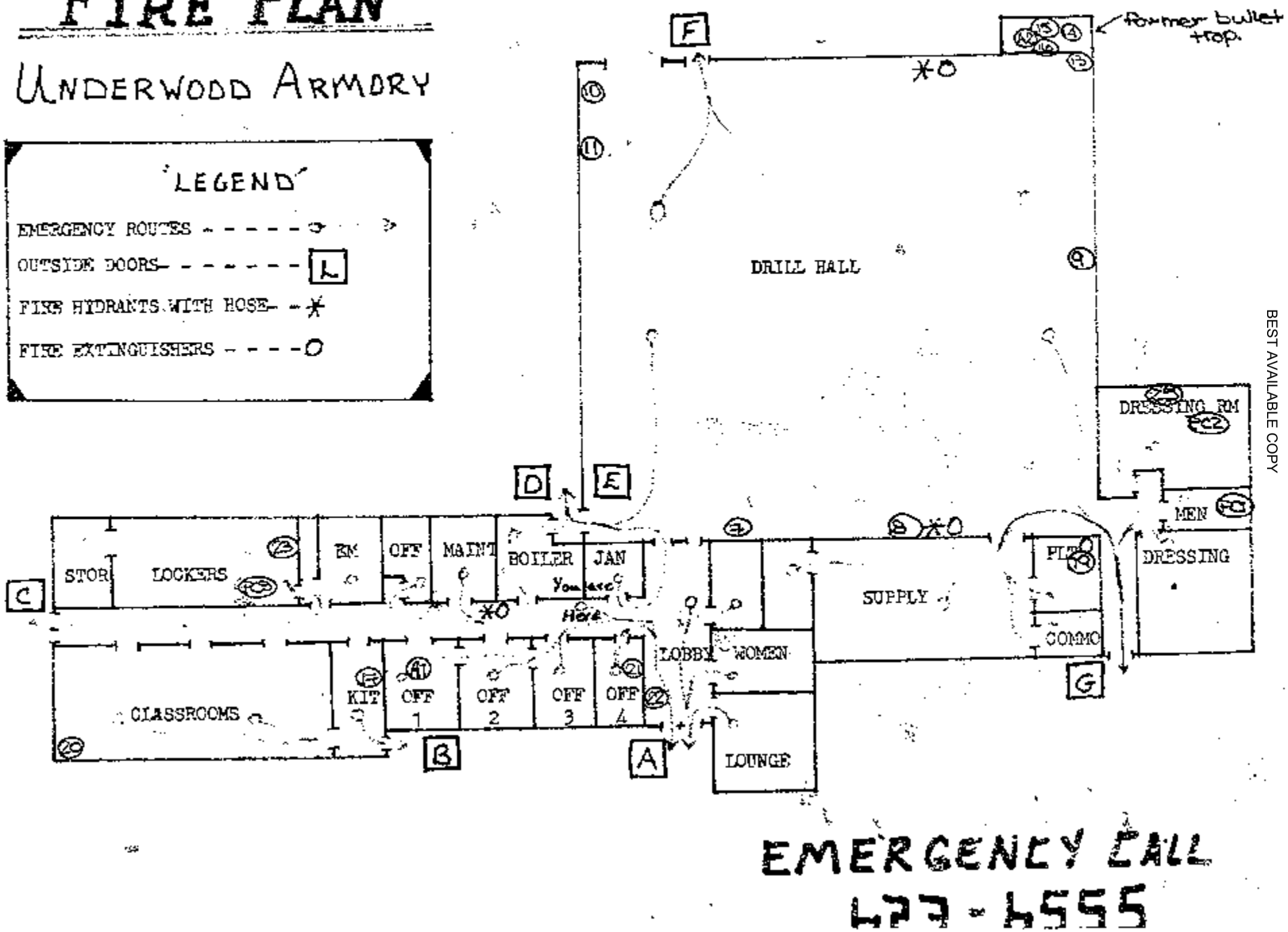
Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout

"FIRE PLAN"

UNDERWOOD ARMORY



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Salem	**Chain Of Custody:**	119258
Address:	301-JH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0408544	WVSAL303-7	Furnace	Wipe	****	0.111	2.70	ug/ft²	9	ug/ft²	
0408545	WVSAL303-8	Furnace	Wipe	****	0.111	13.50	ug/ft²	110	ug/ft²	
0408546	WVSAL303-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	24	ug/ft²	
0408547	WVSAL303-10	Furnace	Wipe	****	0.111	13.50	ug/ft²	60	ug/ft²	
0408548	WVSAL303-11	Furnace	Wipe	****	0.111	5.40	ug/ft²	21	ug/ft²	
0408549	WVSAL303-12	Furnace	Wipe Blank	****	N/A	0.30	ug	0.34	ug	
0408550	WVSAL303-13	Furnace	Wipe	****	0.111	2.70	ug/ft²	9.7	ug/ft²	
0408551	WVSAL303-14	Furnace	Wipe	****	0.111	2.70	ug/ft²	17	ug/ft²	
0408552	WVSAL303-15	Furnace	Wipe	****	0.111	5.40	ug/ft²	22	ug/ft²	
0408553	WVSAL303-16	Furnace	Wipe	****	0.111	2.70	ug/ft²	3.1	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 Non-Responsive **Technical Manager:** Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Salem
Date: 10/30/2003

Sample 1

Sample Number: WVSAL303-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.515	2.516
	2.505	2.498
	2.498	2.521
	2.509	2.529
Average	2.507	2.516

Average Pre and Post 2.5114

Time 1	8:01
Time 2	10:18
Total Time Sampled	2:17
Minutes Sampled	137.00

Volume 344.06 Liters

Sample 2

Sample Number: WVSAL303-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.492	2.46
	2.494	2.463
	2.509	2.453
	2.494	2.45
Average	2.497	2.457

Average Pre and Post 2.4769

Time 1	8:02
Time 2	10:17
Total Time Sampled	2:15
Minutes Sampled	135.00

Volume 334.38 Liters

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Salem
Date: 10/30/03

Sample 1
Sample Number: WVSAL3003-A1
Pump: 476015

	Pre Flow Rate	Post Flow Rate
	2515	2516
	2505	2498
	2498	2521
Average	2509	2529
Average Pre and Post	2507	2516

Time 1 801
Time 2 1018
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2
Sample Number: WVSAL3003-A2
Pump: 483339

	Pre Flow Rate	Post Flow Rate
	2460	2492
	2463	2494
	2453	2509
Average	2450	2494
Average Pre and Post	2457	2497

Time 1 802
Time 2 1017
Total Time Sampled
Minutes Sampled

Volume **Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVKIN312-PC1 hrough WVHUN309-PC1
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33113 through 03-33136
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/2003
Analysis Date:	11/13/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVKIN312-PC1	03-33113	170.	0.017
WVCLA302-PC1	03-33114	ND	ND
VWBUC301-PC1	03-33115	33.	0.0033
VWBUC301-PC2	03-33116	76.	0.0076
VWBUC301-PC3	03-33117	ND	ND
WVGAS310-PC1	03-33119	64.	0.0064
WVELK301-PC1	03-33120	68.	0.0068
WVELK301-PC2	03-33121	1700.	0.17
WVKEY300-PC1	03-33124	1400.	0.14
VWKEY300-PC2	03-33125	1800.	0.18
WVWES708-PC1	03-33129	110.	0.011
WVWES708-PC2	03-33130	71000.	7.1
WVFAI303-PC1	03-33131	54.	0.0054
WVSAI303-PC1	03-33133	900.	0.090
WVSAI303-PC2	03-33134	250.	0.025
WVSAI303-PC3	03-33135	1200.	0.12
WVHUN309-PC1	03-33136	ND	ND
	Prep Blank	ND	
% Recovery	LCS	82.	
% Recovery	32912MS	87.	
% Recovery	32912MSD	89.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive

Analyst

Non-Responsive

Reviewer

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:
Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	WVKIN312-B1 through WVFAI303-BI
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-5546
DCL Sample ID No.:	03-33112 through 03-33132
Sample Receipt Date:	11/12/03
Analysis Date:	11/13/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive
Analyst

Non-Responsive
Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
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800 280-8071, FAX 415 893-9469

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVKIN312-B1	WVBUC301-B1	WVBUC301-B1	WVPHR308-B1	WVSAL303-B1
DCL Sample ID:	03-33112	03-33118A	03-33118B	03-33122	03-33123
Macroscopic Examination					
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Layered	Layered	Homog.	Layered Inseparable
Color:	Grey	Green	Black	Grey	Red/Black
Texture:	Crmby/Fbrs	Compact	Resinous	Fbrs/Crmby	Cmpt/Resns
Description:	Material	Tile	Mastic	Material	Tile/Mastic
Analysis:	PLM	PLM	PLM	PLM	PLM
Asbestiform Minerals					
% Chrysotile:	>20≤30	>1≤3	>3≤5	>10≤20	>1≤3
% Amosite:					
% Crocidolite:					
% Tremolite - Actinolite:					
% Anthophyllite:					
% Total Asbestos:	**>20≤30**	**>1≤3**	**>3≤5**	**>10≤20**	**>1≤3**
Other Materials					
% Cellulose:			>1≤3		
% Fiberglass:				>40≤50	
% Other Fibers:					
% Resin/Binder:		>10≤20	>70≤80		>20≤30
% Non Fibrous:	>60≤70	>70≤80	>10≤20	>20≤30	>60≤70

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVMOU307-B1	WVMOR304-B1	WVSPE310-B1	WVFAI303-B1
DCL Sample ID:	03-33126	03-33127	03-33128	03-33132
Macroscopic Examination				
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Homog.	Homog.	Homog.
Color:	Brown	Grey	Grey	Grey
Texture:	Compact	Crmby/Fbrs	Crmby/Fbrs	Fbrs/Crmby
Description:	Tile	Material	Material	Material
Analysis:	PLM	PLM	PLM	PLM
Asbestiform Minerals				
% Chrysotile:	>1≤3	>20≤30	Trace	>50≤60
% Amosite:				
% Crocidolite:				
% Tremolite - Actinolite:				
% Anthophyllite:				
% Total Asbestos:	**>1≤3**	**>20≤30**	**Trace**	**>50≤60**
Other Materials				
% Cellulose:				
% Fiberglass:			>30≤40	
% Other Fibers:				
% Resin/Binder:	>10≤20			
% Non Fibrous:	>70≤80	>60≤70	>50≤60	>30≤40

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Salem Readiness Center
74 Route 1
Salem, West Virginia 26424

AECOM
December 2012
Document No.: 60275401.1/Salem Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Salem Readiness Center
74 Route 1
Salem, West Virginia 26424

Non-Responsive

Non-Responsive
Project Manager

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Salem Readiness Center

AECOM

Contents

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Executive Summary

On October 17, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Salem Readiness Center facility located at 74 Route 1 in Salem, West Virginia. [redacted], SSG was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Salem Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Salem Readiness Center is currently staffed by four personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and an Assembly/Drill Hall.

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

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

The Salem Readiness Center is housed in a one-story masonry building, and consists of approximately 60% administrative space and 40% Assembly Hall.

Lighting levels measured throughout the facility were generally inadequate as per American National Standards Institute (ANSI) / Illuminating Engineering Society of North America (IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust throughout the facility did not indicate lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Salem Readiness Center at the time of the survey.

No visible damaged friable suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed at the Salem Readiness Center.

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

1.0 Facility Description and Operations

The Salem Readiness Center, constructed in 1959, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The lager one-story section consists primarily of offices and administrative areas, and is finished with sheetrock walls, lay-in ceiling tiles and floor tile. The two-story Assembly/Drill Hall area is finished with painted block walls and a concrete floor. According to site personnel there was an “open” firing range located along one side of the Assembly/Drill Hall.

The primary activity at the Salem Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is frequently rented out for limited civic activities such as group meetings, trade shows, and school activities and to other related local groups and organizations. The Salem Readiness Center is currently staffed by four personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 001	Assembly Hall - table	<110 ug/ft^2
Pb – 002	Kitchen - counter	<110 ug/ft^2
Pb – 003	Recruiter Office - desk top	<110 ug/ft^2
Pb – 004	CO Office - shelf	<110 ug/ft^2
Pb – 005	Administrative Corridor - floor	<110 ug/ft^2
Pb – 006	Storage (Former Firing Range - bullet trap area)	<110 ug/ft^2
Pb – 007	Assembly Hall (Former Firing Range – floor)	<110 ug/ft^2
Pb – 008	Assembly Hall - floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

The wipe samples collected throughout the facility did not detect levels of lead in excess of the ARNG action level of 200 micrograms per square foot (ug/ft^2). Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls and ceilings are coated with paint and appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint at the time of the survey.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Salem Readiness Center during this survey. Thermal system piping is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion at the time of the survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Salem Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Weston Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Administrative Corridor	1.8	400	78.8	32.1
Classroom	1.8	352	79.8	30.2
Kitchen	1.8	412	81.6	27.7
CO Office	1.7	363	81.4	25.3
Admin. Office	1.2	512	83.6	33.4
Break Room	0.4	340	80.9	26.7
Consecution Area - near Hall	1.5	419	81.0	29.5
Women's Restroom	0.8	333	81.0	29.4

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
State Supply Room	0.6	316	79.9	29.3
Men's Restroom	0.6	299	78.3	27.1
Locker Room	0.8	303	77.3	27.5
Physical Fitness Room	0.8	298	74.0	30.6
Boiler Room	0.2	467	83.4	42.9
Assembly Hall	0.2	321	80.3	28.2
Table/Chair Storage Room	0.6	340	77.8	37.2

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Salem Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Salem Readiness Center is heated by a boiler that feeds a radiant heating system. Supply and return air is not provided by mechanical means as there is no active ventilation system.

4.1.2 HVAC Maintenance

There was no active HVAC system observed. However, building personnel presumed that the boiler is inspected annually and any associated filters changed at least once a year.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were generally inadequate.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Administrative Corridor	31.5	Y	5
Classroom	35.8	Y	30
Kitchen	48.7	N	50
CO Office	48.3	N	50
Admin. Office	44.9	N	50
Break Room	22.6	Y	10
Consecution Area - near Hall	26.2	N	30
Women's Restroom	12.9	Y	5
State Supply Room	27.8	N	30
Men's Restroom	21.4	Y	5
Locker Room	66.7	Y	7
Physical Fitness Room	20.6	N	30
Boiler Room	33.2	Y	30
Assembly Hall	39.2	Y	10
Table/Chair Storage Room	6.7	Y	5
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Salem Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Salem Readiness Center.

AECOM did not observe any damaged, friable suspect asbestos-containing materials at the Salem Readiness Center.

AECOM did not observe peeling lead-based paint at the Salem Readiness Center.

AECOM did not observe evidence of water intrusion at the Salem Readiness Center.

Lighting levels measured throughout the facility were inadequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected in association with the administrative and fire range areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

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

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

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

Appendix A

Salem Readiness Center Facility Layout

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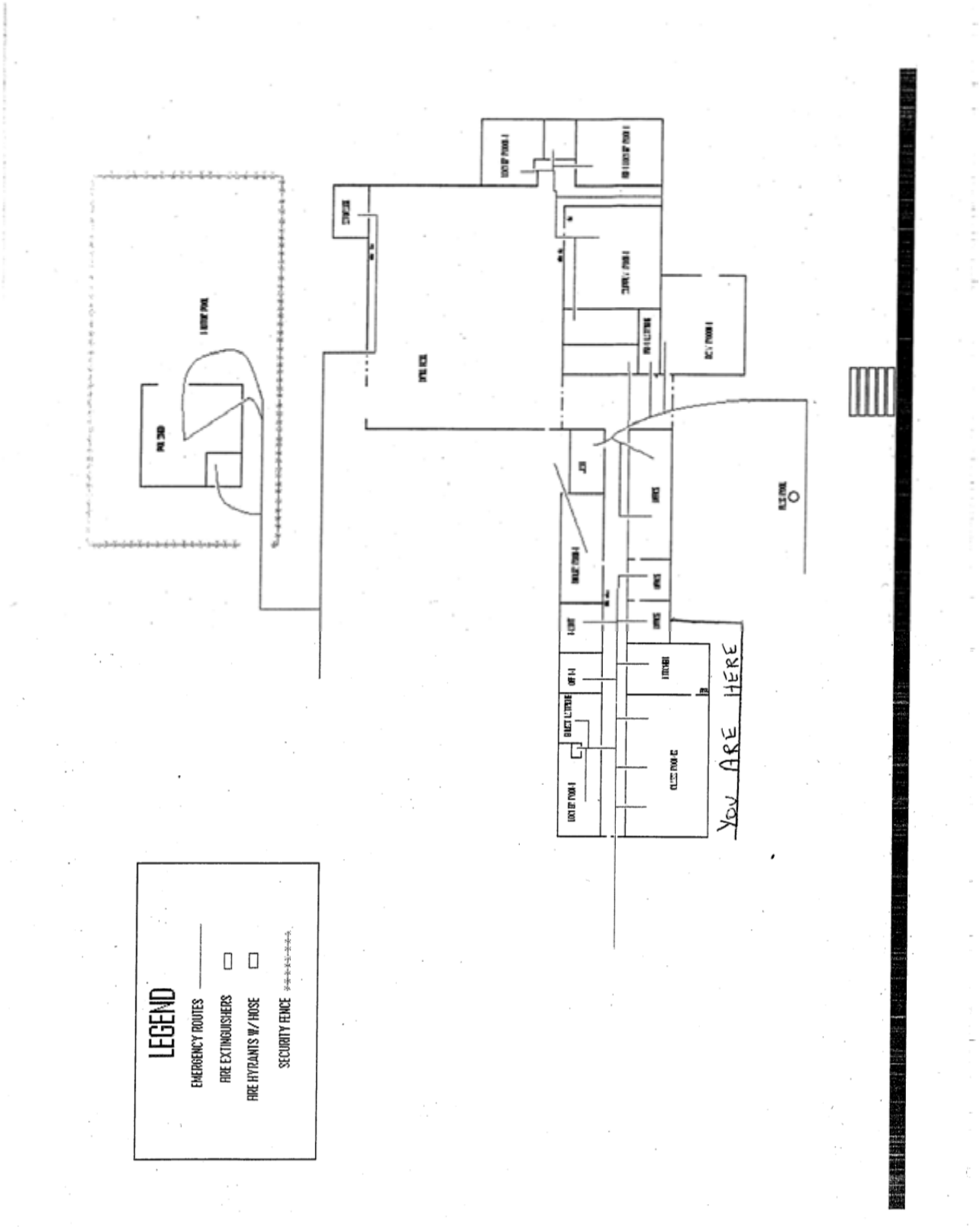

Appendix B

Salem Readiness Center Photographs

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Photograph 1

View of Building Exterior

Photograph 2

View of Administrative Corridor

Photograph 3

View of Classroom

Photograph 4

View of Kitchen

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Photograph 5

View of Recruiter Office Area

Photograph 6

View of Orderly Office Area

AECOM

Photograph 7

View of Foyer

Photograph 8

View of Pantry

AECOM

Photograph 9

View of Radiant Heat Unit in Corridor

Photograph 10

View of Assembly Hall

AECOM

Photograph 11

View of Suspect ACM Pipe Insulation in Assembly Hall

Photograph 12

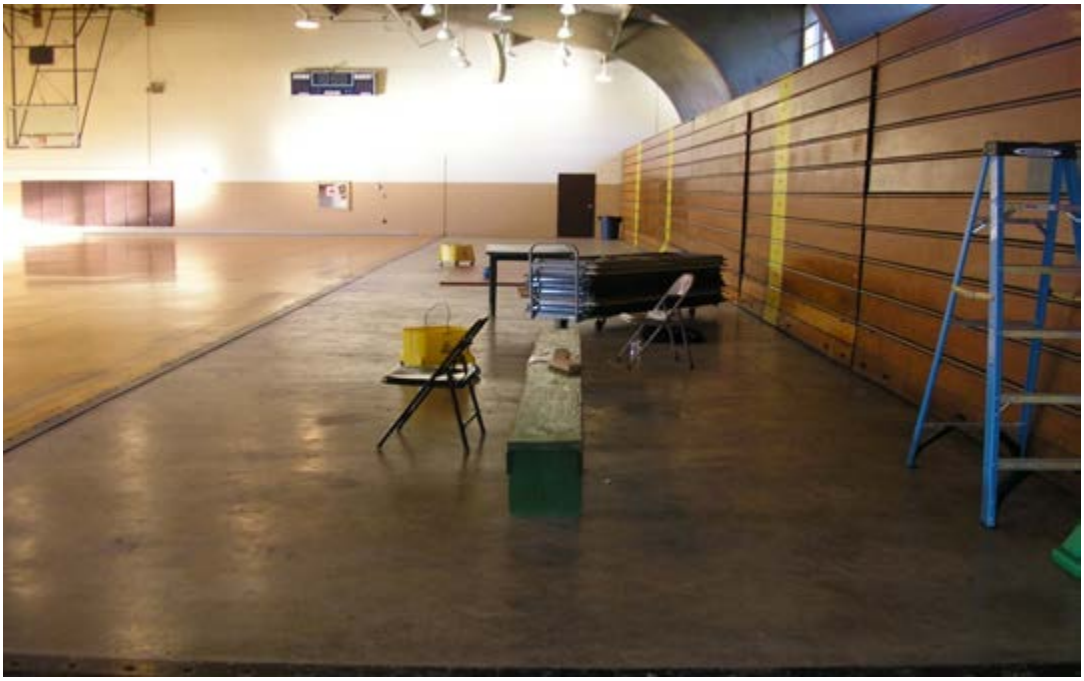
View of Locker Room

AECOM

Photograph 13

View of Physical Fitness Room

Photograph 14



View of Former Open Firing Range

AECOM

Photograph 15

Former Bullet Trap Area (New Block Wall Section) of Open Firing Range

Photograph 16

View of Storage Area

Appendix C

Analytical Results

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	**Job Name:**	Salem RC	**Chain Of Custody:**	514269		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	West Virginia	**Date Submitted:**	10/23/2012		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	AECOM		
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	10/30/2012	**Report Date:**	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result	
13008404	Pb-001	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008405	Pb-002	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008406	Pb-003	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008407	Pb-004	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008408	Pb-005	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008409	Pb-006	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008410	Pb-007	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2
13008411	Pb-008	Flame	Wipe	****	0.111	110	ug/ft^2	<12	<110	ug/ft^2

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LAB #100470

Client:	National Guard Bureau	Job Name:	Salem RC	Chain Of Custody:	514269		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

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

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

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

Non-Responsive

Analy

Non-Responsive

Technical Man

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514269

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

Submittal Information:
1. Job Name: SALEM RC
2. Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Perso Non-Responsive @ phone #
5. Submitted by: AECOM (Signature) Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive .aecom.com
Comments	☐ 2 Day (Date Due) 10/30/12	☐ Fax: Non-Responsive us.army.mil
		☐ Verbal us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

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

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

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ ID	DATE/ TIME	VOL.(L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	MATRIX: WATER AQUEOUS OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/23/12 @ Via: By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Page 1 of

Date Collected: 10/17/12
Job Number: 60275421
Contact Pers: Non-Responsive
Job Name: SALEM RC
Job Location: WEST VIRGINIA
Address: RT 1 BOX 74
SALEM, WV
Company: AECOM
Phone Number: 315 432 0506
Collected B: Non-Responsive
COC Number: —

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Table	1/in^2	Ghost Wipe
Pb-002	Kitchen	Dusty Surface		
Pb-003	Recruiter Office	Desk		
Pb-004	C/O Office	Cabinet		
Pb-005	Admin Corridor	Floor		
Pb-006	Former Range (now office)	Bullet Trap Area		
Pb-007	" " (now corridor)	Floor		
Pb-008	Outside former Range/Drill Hall	Floor		
~~Pb-009~~	(sic)			

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

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AECOM

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NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 10 June 2004

MEMORANDUM FOR WVARNG, Spencer Readiness Center, ATTN: Non-Responsive
207 E. Main Street, Spencer, WV 25276-0824

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive

Encl

Regional Industrial Hygienist

CF: OHM, MAJ Non-Responsive

National Guard Armory
Spencer Readiness Center, Spencer, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned. **RAC -4**
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, orderly room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC -4**
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. It is recommended that an operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials. **RAC -5**
- Indoor air quality measurements for temperature revealed a level that slightly exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes. **RAC -5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC -5**
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be

appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Employees should not use the locker room in the converted firing range until the area has been decontaminated. **RAC -4**

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
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Shaw™ Shaw Environmental, Inc.

National Guard Armory
Spencer Readiness Center – Spencer, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental. Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

National Guard Armory
Spencer Readiness Center – Spencer, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

27 May 2004

Prepared by: Non-Responsive
Industrial Hygienist

Reviewed by: Non-Responsive
Business Line Manager

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Spencer Readiness Center in Spencer, West Virginia. Non-Responsive performed the evaluation on 06 November 2003. The point of contact at the readiness center was acting caretaker Non-Responsive The military unit, as well as the facility's caretaker. was deployed on the date of the survey; therefore no military personnel were present.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Water Damage
- Presence of Mold
- Housekeeping

- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, orderly room, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. It is recommended that an operations and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Indoor air quality measurements for temperature revealed a level that slightly exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Employees should not use the locker room in the converted firing range until the area has been decontaminated.

An ergonomic evaluation was not conducted at this facility because the unit was deployed on the date of the survey; therefore no military personnel were present for interviews.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Spencer Readiness Center in Spencer, West Virginia. Non-Responsive performed the evaluation on 06 November 2003. The point of contact at the readiness center was acting caretaker Non-Responsive The military unit, as well as the facility's caretaker, was deployed on the date of the survey; therefore no military personnel were present.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E) except at three locations in the assembly hall. The samples collected from the supply door serving counter top and two window lever box top surfaces had lead concentrations of 1100, 470, and 260 $\mu g/ft^2$. It is recommended that these surfaces and the immediate area around the surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, orderly room, and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix F) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (orderly room and kitchen). Pease note, the military unit was deployed on the date of the survey; therefore no military personnel were present. The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles and pipe insulation. The floor tiles were in the kitchen, classroom (behind the annex), classroom/kitchen annex, day room/VA office, NCO recruiting office, classroom, orderly room, XO office, hallway to latrines, and main hallway (approximately 2678 square feet). The condition of the floor tiles was considered good in most areas. The condition of the tiles in offices at the desk areas where the chairs sit were considered average (worn). Please note that the tiles in many rooms have been replaced with vinyl tile.

Suspected asbestos containing material in the form of insulation was observed in the boiler room on approximately fifty pipe joints/elbows. It could also be assumed that the suspected asbestos containing insulation remains in the pipe joints/elbows throughout the facility. In addition, suspected asbestos containing material remains on the boiler room duct work (27 linear feet), four pipes (5 linear feet), and a tank (7 linear feet). The condition of the insulation materials on the joints/elbows, tank and pipes was considered good, however, the ductwork had a damaged area; therefore, a bulk sample was collected. The results (see Appendix C) revealed asbestos in the form of chrysotile at a trace level in the gray fibrous/crumbly material. Since the results revealed only a trace of asbestos containing material in the sample collected in the boiler room, the insulation material on the ductwork is not asbestos containing material.

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection did not reveal any mold or current water damage.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees were not conducted. The unit was deployed on the date of the survey; therefore no military personnel were present.

2.3.2 Indoor Air Quality

Interview with the acting caretaker and measurements for carbon dioxide and humidity revealed no indoor air quality concerns at the armory. However, measurements for temperature revealed a level that slightly exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted

so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the ladies room, middle classroom, classroom, orderly room, day room, and NCO office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The room was converted into a locker room/maintenance bay. The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at less than 2.7 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 49 $\mu g/ft^2$;
- bullet trap floor at 3600 $\mu g/ft^2$;
- bullet trap wall at 2300 $\mu g/ft^2$;
- stored item (flammable cabinet top surface) 370 $\mu g/ft^2$; and
- light fixture (light shield surface) at 3600 $\mu g/ft^2$.

The lead levels at four of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the bullet trap due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and

items have been cleaned and re-sampled. Employees should not use the locker room until the area has been decontaminated.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHHM

A Health Hazard Information Module (HHHM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, water damage, visible mold, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

An ergonomic evaluation was not conducted at this facility because the unit was deployed on the date of the survey; therefore no military personnel were present for interviews.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Spencer, West Virginia
Date of Sampling: 06 November 2003

Sample Number	Location	Results, µg/ft² [a]
WVSPE310-7	Assembly room – soda machine top surface (See Building Layout – Appendix B)	< 2.7
WVSPE310-8	Assembly room - supply door serving counter top (See Building Layout Appendix B)	1100
WVSPE310-9	Assembly room - heater vent top surface (adjacent to stage area) (See Building Layout Appendix B)	< 2.7
WVSPE310-10	Assembly room - window lever box top surface (See Building Layout Appendix B)	470
WVSPE310-11	Assembly room - window lever box top surface (See Building Layout - Appendix B)	260
WVSPE310-12	Field Blank	< 0.3 µg
WVSPE310-20	Kitchen stove shelf to surface	< 2.7
WVSPE310-21	Day Room – cabinet top	6.6
WVSPE310-22	Orderly Room table top	94
WVSPE310-23	Classroom air conditioner top surface	12
WVSPE310-24	Field Blank	< 0.3 µg
WVSPE310-25	Locker Room – locker #59 top surface	20
WVSPE310-26	Stage Office – hard drive top surface	18

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Spencer, West Virginia
Date of Sampling: 06 November 2003

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVSPE310-A1	Orderly Room	0757-0958/121	2.4976	302.21	<0.003
WVSPE310-A2	Kitchen	0757-0958/121	2.4654	298.31	<0.003
WVSPE310-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Spencer, West Virginia
Date of Sampling: 06 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Kitchen	1	527	57.6	74.7
Outdoors	-	523	86.3	58.5

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Spencer, West Virginia

Date of Sampling: 06 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Ladies Room	6.4-38.6	40	No
Kitchen	20.6-52.3	70	No
Classroom (middle)	30.1-50.3	70	No
Classroom	25.1-44.2	70	No
Main Hallway	2.3-9.1	7.5	Some Areas
Orderly Room	25.2-38.7	70	No
Day Room	16.9-39.2	70	No
NCO Office	25.2-41.3	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Spencer, West Virginia

Date of Sampling: 06 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVSPE310-13	Floor Outside of Range	< 2.7
WVSPE310-14	Floor	49
WVSPE310-15	Bullet Trap Floor	3600
WVSPE310-16	Bullet Trap Wall	2300
WVSPE310-17	Stored Item -- shelf top	370
WVSPE310-18	Blank	< 2.7 µg
WVSPE310-19	Light Fixtures -- light shield surface	3600

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Spencer Armory West Virginia ARNG	Spencer

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / AOO

URVEY DATE	EVALUATOR (Initials)
06 November 2008	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive : SSG

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 927 1810	Det. 1 COB 104TH ECB	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1*	2	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D Physical (Uncontrolled
7439-92-1	Lead, Inorganic dusts & Fumes, as Pb	2-moderate	C Uncontrolled Respiratory
1332-21-4	Asbestos (Other)	2-moderate	C Uncontrolled Respiratory
FOHEATSTR	Heat Stress	3-low	D Uncontrolled Physical

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAIL	MIL
			"	"	C/U
			"	"	C/U

SECTION 6. COMMENTS

No comments See attached sheet

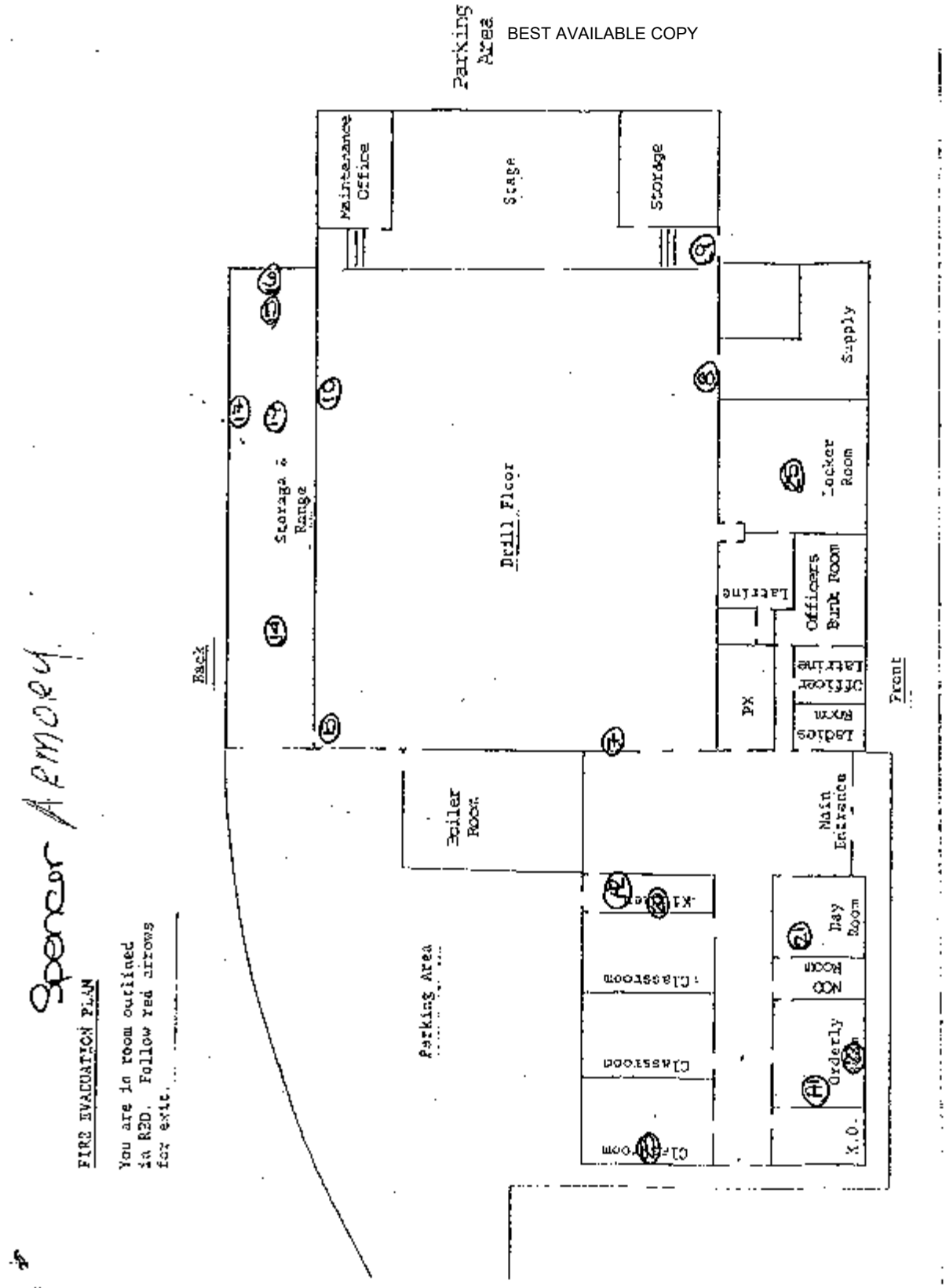
Non-Responsive conducted survey building contains 2 full time military personnel and 1 civilian caretaker (Non-Responsive is the acting caretaker since active caretaker is deployed.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Spencer Armory

FIRE EVACUATION PLAN

You are in room outlined in RED. Follow red arrows for exit.

Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Spencer	**Chain Of Custody:**	119269
Address:	301-IB Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/20/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Response
		P.O. Number:	1103	**Report Date:**	20-Nov-03

Attention: Non-Response

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
0408639	WVSPE310-7	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0408640	WVSPE310-8	Flame	Wipe	****	0.111	108.01	ug/ft²	1100	ug/ft²	
0408641	WVSPE310-9	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0408642	WVSPE310-10	Flame	Wipe	****	0.111	108.01	ug/ft²	470	ug/ft²	
0408643	WVSPE310-11	Furnace	Wipe	****	0.111	67.51	ug/ft²	260	ug/ft²	
0408644	WVSPE310-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0408645	WVSPE310-13	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0408646	WVSPE310-14	Furnace	Wipe	****	0.111	13.50	ug/ft²	49	ug/ft²	
0408647	WVSPE310-15	Flame	Wipe	****	0.111	108.01	ug/ft²	3600	ug/ft²	
0408648	WVSPE310-16	Flame	Wipe	****	0.111	108.01	ug/ft²	2300	ug/ft²	
0408649	WVSPE310-17	Flame	Wipe	****	0.111	108.01	ug/ft²	370	ug/ft²	
0408650	WVSPE310-18	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0408651	WVSPE310-19	Flame	Wipe	****	0.111	108.01	ug/ft²	3600	ug/ft²	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVSPE310	**Chain Of Custody:**	121273
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Spencer	**Date Analyzed:**	12/30/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	30-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413684	WVSPE310-20	Furnace	Wipe	****	0.111	2.70	ug/ft²	< 2.7	ug/ft²	
0413685	WVSPE310-21	Furnace	Wipe	****	0.111	2.70	ug/ft²	6.6	ug/ft²	
0413686	WVSPE310-22	Furnace	Wipe	****	0.111	33.75	ug/ft²	94	ug/ft²	
0413687	WVSPE310-23	Furnace	Wipe	****	0.111	2.70	ug/ft²	12	ug/ft²	
0413688	WVSPE310-24	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413689	WVSPE310-25	Furnace	Wipe	****	0.111	2.70	ug/ft²	20	ug/ft²	
0413690	WVSPE310-26	Furnace	Wipe	****	0.111	2.70	ug/ft²	18	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: Non-Responsive **Technical Manager:** Non-Responsive

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:**	Spencer	**Chain Of Custody:**	119269
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/20/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	20-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Final Result	Comments

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

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

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Spencer
Date: 11/6/2003

Sample 1

Sample Number: WVSPE310-A1

Pump:	647615	
	Pre Flow Rate	**Post Flow Rate**
	2.522	2.459
	2.521	2.48
	2.511	2.495
	2.516	2.477
Average	**2.518**	**2.478**

Average Pre and Post **2.4976**

Time 1	7:57
Time 2	9:58
Total Time Sampled	**2:01**
Minutes Sampled	121.00

Volume **302.21 Liters**

Sample 2

Sample Number: WVSPE310-A2

Pump:	648339	
	Pre Flow Rate	**Post Flow Rate**
	2.475	2.44
	2.488	2.455
	2.473	2.464
	2.478	2.45
Average	**2.479**	**2.452**

Average Pre and Post **2.4654**

Time 1	7:57
Time 2	9:58
Total Time Sampled	**2:01**
Minutes Sampled	121.00

Volume **298.31 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory Location: Spencer
Date: 11/6/08

Sample 1
Sample Number: WVSPE310-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2522	2459
	2521	2480
Average	2511	2495
	2516	2477
Average Pre and Post	2518	2478

Time 1 757
Time 2 958
Total Time Sampled
Minutes Sampled

Volume Liters

Sample 2
Sample Number: WVSPE310-A2
Pump: 648329

	Pre Flow Rate	Post Flow Rate
	2475	2440
	2488	2455
Average	2473	2464
	2478	2489
Average Pre and Post	2479	2482

Time 1 757
Time 2 958
Total Time Sampled
Minutes Sampled

Volume Liters

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:

Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	WVKIN312-B1 through WVFAI303-BI
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-5546
DCL Sample ID No.:	03-33112 through 03-33132
Sample Receipt Date:	11/12/03
Analysis Date:	11/13/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive
Analyst

Non-Responsive
Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

CINCINNATI OFFICE
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NOVATO, CALIFORNIA 94945
800 280-6071, FAX 415 893-9469

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVKIN312-B1	WVBUC301-B1	WVBUC301-B1	WVPHR308-B1	WVSAL303-B1
DCL Sample ID:	03-33112	03-33118A	03-33118B	03-33122	03-33123
Macroscopic Examination					
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Layered	Layered	Homog.	Layered Inseparable
Color:	Grey	Green	Black	Grey	Red/Black
Texture:	Crmby/Fbrs	Compact	Resinous	Fbrs/Crmby	Cmpt/Resns
Description:	Material	Tile	Mastic	Material	Tile/Mastic
Analysis:	PLM	PLM	PLM	PLM	PLM
Asbestiform Minerals					
% Chrysotile:	>20≤30	>1≤3	>3≤5	>10≤20	>1≤3
% Amosite:					
% Crocidolite:					
% Tremolite - Actinolite:					
% Anthophyllite:					
% Total Asbestos:	**>20≤30**	**>1≤3**	**>3≤5**	**>10≤20**	**>1≤3**
Other Materials					
% Cellulose:			>1≤3		
% Fiberglass:				>40≤50	
% Other Fibers:					
% Resin/Binder:		>10≤20	>70≤80		>20≤30
% Non Fibrous:	>60≤70	>70≤80	>10≤20	>20≤30	>60≤70

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

11/13/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia
Set ID: 03-A-5546

Client Sample ID:	WVMOU307-B1	WVMOR304-B1	WVSPE310-B1	WVFAI303-B1
DCL Sample ID:	03-33126	03-33127	03-33128	03-33132
Macroscopic Examination				
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Homog.	Homog.	Homog.
Color:	Brown	Grey	Grey	Grey
Texture:	Compact	Crmby/Fbrs	Crmby/Fbrs	Fbrs/Crmby
Description:	Tile	Material	Material	Material
Analysis:	PLM	PLM	PLM	PLM
Asbestiform Minerals				
% Chrysotile:	>1≤3	>20≤30	Trace	>50≤60
% Amosite:				
% Crocidolite:				
% Tremolite - Actinolite:				
% Anthophyllite:				
% Total Asbestos:	**>1≤3**	**>20≤30**	**Trace**	**>50≤60**
Other Materials				
% Cellulose:				
% Fiberglass:			>30≤40	
% Other Fibers:				
% Resin/Binder:	>10≤20			
% Non Fibrous:	>70≤80	>60≤70	>50≤60	>30≤40

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 10 June 2004

MEMORANDUM FOR WVARNG, St. Albans Readiness Center, ATTN: SFC Non-Respo Non-Responsive PO Box 1490-610 Dame St., St. Albans, WV 25177-1490

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive
Regional Industrial Hygienist

Encl

CF: OHM, MAJ Non-Responsive

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw® Shaw Environmental, Inc.

National Guard Armory
St. Albans Readiness Center – St. Albans, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

26 May 2004

National Guard Armory
St. Albans Readiness Center – St. Albans, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

26 May 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

National Guard Armory
St. Albans Readiness Center, St. Albans, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that this surface and the areas immediately around this surface be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned. **RAC -4**
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, classroom, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC -4**
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. The suspected asbestos containing material on a tank in the boiler room was damaged. A bulk sample was collected for the insulation on this tank, and the results revealed asbestos in the form of chrysotile at 20-30 % in the gray fibrous/crumbly material. The exposed asbestos containing insulation material on the tank in the boiler room should be repaired. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials. **RAC -4**
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems. **RAC -5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in all of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC -5**

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas and the stored items in these areas must be decontaminated by a thorough cleaning until surface the lead concentration is reduced to below the recommended level. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in these areas without protective clothing until the area and the stored items in these areas have been cleaned and re-sampled. **RAC -4**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE	OTSG APPROVED (Date)
WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD	

DIRECTORATE St. Albans Armory BLDG/ROOM St. Albans

SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study

JOB DESCRIPTION/SERIES Military/Administrative Operations

SAMPLING DATE November 19, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.003	<0.003	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive Industrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (*For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility*)

NAME: Non-Responsive SFC: 11/19/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: (Last Four) Non-R		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-768-8011		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 1 MAY 78 4700

HSXR-APG-Z OP 32 1 Jan 90

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the St. Albans Readiness Center in St. Albans, West Virginia Non-Responsive Non-Respons performed the evaluation on 19 November 2003. The point of contact at the readiness center was SFC Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality

- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed a concentration above the recommended level in the assembly hall of the armory. It is recommended that this surface and the areas immediately around this surface be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, classroom, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. The suspected asbestos containing material on a tank in the boiler room was damaged. A bulk sample was collected for the insulation on this tank, and the results revealed asbestos in the form of chrysotile at 20-30 % in the gray fibrous/crumbly material. The exposed asbestos containing insulation material on the tank in the boiler room should be repaired. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in all of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls

with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas and the stored items in these areas must be decontaminated by a thorough cleaning until surface the lead concentration is reduced to below the recommended level. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in these areas without protective clothing until the area and the stored items in these areas have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the St. Albans Readiness Center in St. Albans, West Virginia. Non-Responsiv Non-Responsi performed the evaluation on 19 November 2003. The point of contact at the readiness center was SFC Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix B) except at one location. One sample collected from the assembly hall (amnesty box top surface) had a lead concentration of 680 $\mu g/ft^2$. It is recommended that this surface and the immediate area around this surface be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, classroom, and converted firing range. Please note that the

Recommendations for Surface Lead Dust in Armories (Appendix B) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on one (1) full-time building occupant. In addition, a general sample was taken in the training/S-3 office. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles and pipe insulation. The floor tiles were observed in the lobby, hallways, training NCO office, CO Headquarters office, CO CDR office, S-2 NCO office, recruiting/retention office, S-2 office, RTD 1 and 2 offices, S-3 office, room adjacent to S-3 office, and S-1 offices inclusive of CP CDR office, XO office, CSM office and copier mail room (over 1000 square feet). The condition of the floor tiles was considered good in most locations. There was some floor tile damage that was localized to chair areas, such as in the CO CDR office and at door stops in the classroom. The pipe insulation was observed in the pipe elbows/joints in the men's latrine, women's latrine, gym, gym alcove, S-4 office, and boiler room (approximately 117 pipe joints/elbows). It could

also be assumed that the suspected asbestos containing insulation remains in the pipe joints/elbows throughout the facility. Pipe insulation was also observed on a tank in the boiler room (approximately 7 linear feet). The condition of the insulation materials was considered good (no rips, tears, or other damage) in most locations with the exception of the insulation on a tank in the boiler room. A bulk sample was collected for the insulation on this tank, and the results revealed asbestos in the form of chrysotile at 20-30 % in the gray fibrous/crumbly material.

The exposed asbestos containing insulation material on the tank in the boiler room should be repaired. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. Mold was not observed, however, the inspection revealed water damage in the converted firing range, drill hall, gym, dining room, and boiler room.

The source of the water damage was likely from roof leaks. Please note that the roof is scheduled to be replaced. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interview with employees and measurements for carbon dioxide, temperature and humidity revealed no indoor air quality concerns at the armory. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in all areas, including the drill hall, lobby, exercise room, conference room, and men's restroom. Please note that additional lighting that meets the requirements was provided at the desk areas of the CO CDR office, S-3 office, and S-1 office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The room was converted into a storage room. The results are provided in Table 5. The results revealed lead, with associated concentrations, at the following locations:

- lighting fixture at 28000 micrograms lead per square foot ($\mu g/ft^2$);
- stored item (shelf surface) at 5100 $\mu g/ft^2$;
- floor at 73 $\mu g/ft^2$; and
- floor outside the range at 110 $\mu g/ft^2$.

The lead level at two of these locations was above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas and the stored items in the converted firing range must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, housekeeping, ergonomic concerns, indoor air quality, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
St. Albans, West Virginia
Date of Sampling: 19 November 2003

Sample Number	Location	Results, µg/ft² [a]
WVSTA323-1	Assembly room - - amnesty box top surface (See Building Layout - Appendix B)	680
WVSTA323-2	Assembly room -- table top (See Building Layout Appendix B)	37
WVSTA323-3	Assembly room - - table top (See Building Layout Appendix B)	40
WVSTA323-4	Assembly room table top (See Building Layout -- Appendix B)	36
WVSTA323-5	Assembly room – vending machine top surface (See Building Layout Appendix B)	180
WVSTA323-6	Field Blank	< 0.3 µg
WVSTA323-11	Design Section Office - desktop	20
WVSTA323-12	Field Blank	0.33 µg
WVSTA323-13	Exercise Room – television stand shelf	13
WVSTA323-14	Lobby – display case top surface	14
WVSTA323-15	S-2 Office – computer monitor top surface	4.6
WVSTA323-16	Kitchen – stove shelf	13
WVSTA323-17	Training Office television top surface	8.2
WVSTA323-18	Field Blank	< 0.3 µg
WVSTA323-19	Classroom - - podium top surface	91
WVSTA323-20	S-1 Office - - desktop	3
WVSTA323-21	Supply room - desktop	22

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone/General Air Samples for Lead
National Guard Armory
St. Albans, West Virginia
Date of Sampling: 19 November 2003

Sample Number	General Sample Location/ Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVSTA323-A1	Training Office	0743-1002/139	2.5224	350.61	<0.003
WVSTA323-A2	Non-Responsive	0745-1002/137	2.4755	339.14	<0.003
WVSTA323-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3

Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature

National Guard Armory

St. Albans, West Virginia

Date of Sampling: 19 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor – Drill Hall	1	507	58.6	73.0
Outdoors	-	496	76.8	65.7

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

St. Albans, West Virginia

Date of Sampling: 19 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Drill Hall	8.9-16.3	70	No
Lobby	17.8-67.3	70	No
Exercise Room	6.7-27.1	70	No
CO CDR Office	19.1-38.2	70	No*
S-3 Office	11.1-29.3	70	No*
Conference Room	18.9-41.3	70	No
S-1 Office	19.2-31.3	70	No*
Men's Restroom	6.7-35.8	40	No

[a] fc Footcandles

* Additional lighting provided above desk/working area

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

St. Albans, West Virginia

Date of Sampling: 19 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVSTA323-7	Light Fixture	28000
WVSTA323-8	Stored Items - - shelf surface	5100
WVSTA323-9	Floor	73
WVSTA323-10	Floor outside the range	110

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	St. Albans West Virginia ARNG	St. Albans

OCATION/CODE	OPERATION/CODE
Administrative Areas/ AA	Administrative Operations/ ADO

URVEY DATE	EVALUATOR (Initials)
19 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SFC

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 722 0607	771st Hq's.	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	9	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
PCVDTXXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
7439-92-1	Lead, Inorganic dust & fumes as Pb	2-moderate	C-Uncontrolled Respiratory
12001-29-5	Asbestos (Chrysotile	2-moderate	↓
1332-21-4	Asbestos (other)	2-moderate	↓

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAILABLE	MIL
			M		
			M		
			M		
			M		
			F	Non-Responsive	
			M		
			F		
			M		CIV

SECTION 6. COMMENTS

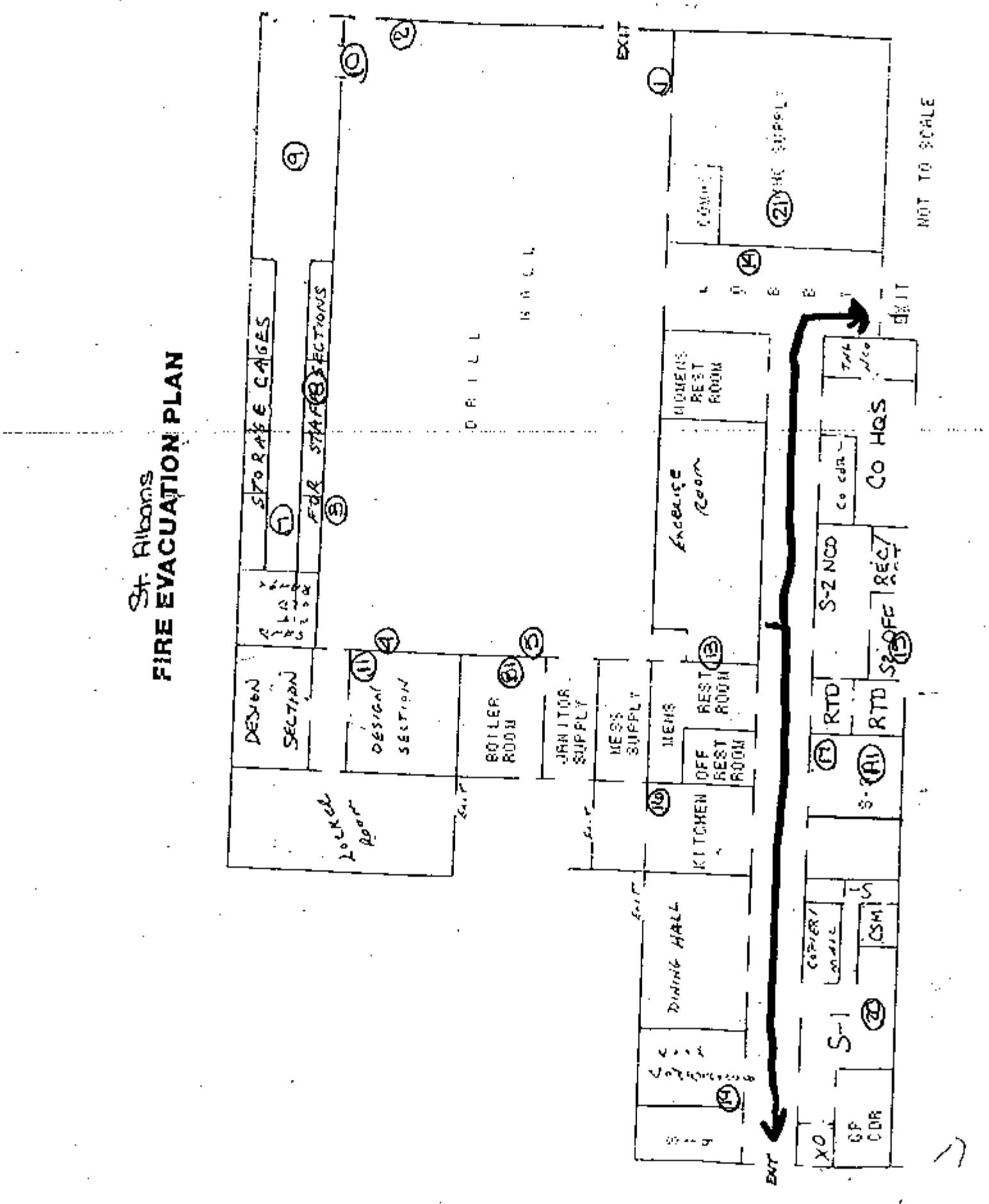
Survey conducted by Non-Responsive See attached sheet
personnel and (one) civilian caretaker. Building contains 9 full-time military
mainly administrative tasks.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	St. Albans	**Chain Of Custody:**	119405
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	12/04/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	05-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0411112	WVSTA323-1	Flame	Wipe	****	0.111	108.01	ug/ft²	680	ug/ft²	
0411113	WVSTA323-2	Furnace	Wipe	****	0.111	6.75	ug/ft²	37	ug/ft²	
0411114	WVSTA323-3	Furnace	Wipe	****	0.111	6.75	ug/ft²	40	ug/ft²	
0411115	WVSTA323-4	Furnace	Wipe	****	0.111	6.75	ug/ft²	36	ug/ft²	
0411116	WVSTA323-5	Furnace	Wipe	****	0.111	67.51	ug/ft²	180	ug/ft²	
0411117	WVSTA323-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0411118	WVSTA323-7	Flame	Wipe	****	0.111	108.01	ug/ft²	28000	ug/ft²	
0411119	WVSTA323-8	Flame	Wipe	****	0.111	108.01	ug/ft²	5100	ug/ft²	
0411120	WVSTA323-9	Furnace	Wipe	****	0.111	13.50	ug/ft²	73	ug/ft²	
0411121	WVSTA323-10	Furnace	Wipe	****	0.111	33.75	ug/ft²	110	ug/ft²	

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

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

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

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

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

Analy[redacted] Non-Responsive

Technical Manager: Non-Responsive

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:**	WVSTA323	**Chain Of Custody:**	121275
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	St. Albans	**Date Analyzed:**	12/30/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsi
		P.O. Number:	1103	**Report Date:**	30-Dec-03

Attention: Non-Respon

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
0413691	WVSTA323-11	Furnace	Wipe	****	0.111	2.70	ug/ft²	20	ug/ft²	
0413692	WVSTA323-12	Furnace	Wipe Blank	****	N/A	0.30	ug	0.33	ug	
0413693	WVSTA323-13	Furnace	Wipe	****	0.111	2.70	ug/ft²	13	ug/ft²	
0413694	WVSTA323-14	Furnace	Wipe	****	0.111	2.70	ug/ft²	14	ug/ft²	
0413695	WVSTA323-15	Furnace	Wipe	****	0.111	2.70	ug/ft²	4.6	ug/ft²	
0413696	WVSTA323-16	Furnace	Wipe	****	0.111	2.70	ug/ft²	13	ug/ft²	
0413697	WVSTA323-17	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.2	ug/ft²	
0413698	WVSTA323-18	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413699	WVSTA323-19	Furnace	Wipe	****	0.111	13.50	ug/ft²	91	ug/ft²	
0413700	WVSTA323-20	Furnace	Wipe	****	0.111	2.70	ug/ft²	3	ug/ft²	
0413701	WVSTA323-21	Furnace	Wipe	****	0.111	2.70	ug/ft²	22	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: Non-Responsive **Technical Manager:** Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVOAK321-A1 through VACLI325-A3
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5799
DCL Sample ID No.:	03-34380 through 03-34414
Sample Receipt Date:	11/25/2003
Preparation Date:	12/02/03
Analysis Date:	12/03/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVOAK321-A1	03-34380	228.69	ND	<0.004
WVOAK321-A2	03-34381	225.34	ND	<0.004
WVOAK321-A3	03-34382	0	ND	-
WVBEC321-A1	03-34384	305.03	ND	<0.003
WVBEC321-A2	03-34385	301.29	ND	<0.003
WVBEC321-A3	03-34386	0	ND	-
WVDUN323-A1	03-34387	418.71	ND	<0.002
WVDUN323-A2	03-34388	426.37	ND	<0.002
WVDUN323-A3	03-34389	0	ND	-
WV2CH322-A1	03-34390	330.94	ND	<0.003
WV2CH322-A2	03-34391	324.29	ND	<0.003
WV2CH322-A3	03-34392	0	ND	-
WV1CH322-A1	03-34393	316.36	ND	<0.003
WV1CH322-A2	03-34394	312.78	ND	<0.003
WV1CH322-A3	03-34395	0	ND	-
WVSTA323-A1	03-34396	350.61	ND	<0.003
WVSTA323-A2	03-34397	339.14	ND	<0.003
WVSTA323-A3	03-34398	0	ND	-
WVCHA324-A1	03-34400	162.63	ND	<0.006
WVCHA324-A2	03-34401	172.47	ND	<0.006
	Prep Blank		ND	
% Recovery	LCS 1		109.	
% Recovery	LCS 2		111.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVCHA324-A3	03-34402	0	ND	-
WVALL324-A1	03-34403	222.94	ND	<0.004
WVALL324-A2	03-34404	219.24	ND	<0.005
WVALL324-A3	03-34405	0	ND	-
WVRON325-A1	03-34406	327.48	ND	<0.003
WVRON325-A2	03-34407	322.77	ND	<0.003
WVRON325-A3	03-34408	0	ND	-
VACLI325-A1	03-34412	390.23	ND	<0.003
VACLI325-A2	03-34413	405.99	ND	<0.002
VACLI325-A3	03-34414	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 3		107.	
% Recovery	LCS 4		105.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory | Location: St. Albans | Date: 11/19/2003

Sample 1

Sample Number: WVSTA323-A1

Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.533	2.496
	2.552	2.504
	2.541	2.503
	2.524	2.526
Average	2.538	2.507

Average Pre and Post: 2.5224

Time 1: 7:43
Time 2: 10:02
Total Time Sampled: 2:19
Minutes Sampled: 139.00

Volume: 350.61 Liters

Sample 2

Sample Number: WVSTA323-A2

Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.495	2.436
	2.497	2.469
	2.497	2.456
	2.498	2.456
Average	2.497	2.454

Average Pre and Post: 2.4755

Time 1: 7:45
Time 2: 10:02
Total Time Sampled: 2:17
Minutes Sampled: 137.00

Volume: 339.14 Liters

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** St. Albans
Date: 11/19/03

Sample 1

Sample Number: WVSTA323-A1
Pump: 647L615

	Pre Flow Rate	Post Flow Rate
	2533	2496
	2552	504
Average	2541	503
	2524	526
Average Pre and Post	2538	2507

Time 1 743
Time 2 1002
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2

Sample Number: WVSTA323-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2495	2436
	2497	69
Average	2497	56
	2498	56
Average Pre and Post	2497	2454

Time 1 745
Time 2 1002
Total Time Sampled
Minutes Sampled

Volume **Liters**

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:

Non-Responsive

Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	WVSTA323-B1 through WVRON325-B1
P.O. No.:	1103
Sample Location:	Various / WV
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-5799
DCL Sample ID No.:	03-34399 through 03-34411
Sample Receipt Date:	11/25/03
Analysis Date:	11/26/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive

Analyst

Non-Responsive

Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

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800 280-8071, FAX 415 893-9469

11/26/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: Various / WV
Set ID: 03-A-5799

Client Sample ID:	WVSTA323-B1	WVRON325-B1	WVRON325-B1	WVRON325-B1
DCL Sample ID:	03-34399	03-34411A	03-34411B	03-34411C
Macroscopic Examination				
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Layered	Layered	Layered
Color:	Grey	Grey	Black	Grey
Texture:	Crmby/Fbrs	Compact	Resinous	Crumbly
Description:	Material	Tile	Mastic	Material
Analysis:	PLM	PLM	PLM	PLM
Asbestiform Minerals				
% Chrysotile:	>20≤30	>1≤3	Trace	>1≤3
% Amosite:				
% Crocidolite:				
% Tremolite - Actinolite:				
% Anthophyllite:				
% Total Asbestos:	**>20≤30**	**>1≤3**	**Trace**	**>1≤3**
Other Materials				
% Cellulose:			>1≤3	>1≤3
% Fiberglass:	>10≤20			
% Other Fibers:				
% Resin/Binder:		>10≤20	>70≤80	
% Non Fibrous:	>40≤50	>70≤80	>10≤20	>90≤100

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

INDUSTRIAL HYGIENE SURVEY
READINESS CENTER
ST. ALBANS, WEST VIRGINA
19 JULY 2012

1. REFERENCES. See Appendix A.

2. PURPOSE. The purpose of this industrial hygiene survey was to identify and evaluate potential occupational health hazards at the Army National Guard Readiness Center, St. Albans, West Virginia.

3. GENERAL.

a. Survey Personnel. This survey was conducted on 19 July 2012 by Non-Responsive Industrial Hygienist, from the United States Army Public Health Command Region North (USAPHCR-North) Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. RACs are determined by using the RAC tables from the Department of Defense Instruction (DODI) 6055.1 (reference 1). The Health Hazard Severity Code table is provided in Appendix B of this report.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1). The Occupational Safety and Health Administration (OSHA), through the Code of Federal Regulations (CFR), have enforceable regulatory standards for workplace safety (reference 2). The American National Standard Institute (ANSI) and American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) publish standards for indoor air quality and thermal comfort (references 3 and 4). The Illuminating Engineering Society of North America (IESNA) publishes design recommendations for illumination (references 7 and 8).

b. Calibration. All instruments were calibrated utilizing National Institute of Standards and Technology (NIST) traceable methods and manufacturers' instructions.

c. Methodology. The survey consisted of air quality assessments; air flow and illumination measurements; and visual inspections.

5. FINDINGS AND DISCUSSION.

a. Indoor Air Quality (IAQ).

(1) Temperature and Humidity. The temperature in degrees Fahrenheit (°F) and relative humidity (RH) in percent were measured to assess building IAQ. For most of the building the temperature measured 72°F and 58% RH. The ASHRAE Standard 55-2010 (figure 5.2.1.1) recommends an operative temperature range in summer months of 75°- 82°F at 60% RH which should be found acceptable by approximately 80% of building occupants (reference 3). The interior temperature was acceptable to building occupants, however, may increase utility costs if maintained throughout the day.

(2) Carbon Dioxide and Carbon Monoxide. Appendix B of the ANSI/ASHRAE Standard 62.1-2010 is merely informative and does not contain standards or requirements (reference 4). It does however, outline recommended concentrations for carbon dioxide and carbon monoxide in the workplace as a means to assess the IAQ. Table B-1 notes carbon monoxide should not exceed 9 parts per million (ppm) and carbon dioxide should not exceed 5000 ppm (or 700 ppm more than the outdoor air). Carbon monoxide was not detected at any concentration in the Readiness Center. The outdoor air concentration of carbon dioxide on the day of this survey was 419 ppm and the largest level measured in the facility was 497 ppm which was acceptable.

(3) Physical Fitness Room. Because of recent severe weather and multiple power outages the Readiness Center physical fitness room heating, ventilation, and air conditioning (HVAC) system was inoperable and could not be assessed. The facility manager placed a work order for repairs to the system and was waiting for the repairs to occur.

b. Lead Hazards. According to 40 CFR Part 745, Lead; Identification of Dangerous Levels of Lead, Section II, B, paint containing lead levels of 0.5% or more by weight in dried solid (also reported as 5,000 milligrams per kilogram) is considered to be lead-based paint (LBP) (reference 5). The painted surfaces throughout the building were in good condition, with no peeling paint evident.

c. Physical Condition of Facilities.

(1) Asbestos. No friable or damaged asbestos containing material (ACM) was observed inside the Readiness Center during this walkthrough. The 29 CFR Part 1910.1001 (b) defines ACM as materials containing more than 1% asbestos by weight (Reference 2).

(2) Mold and Moisture Problems. Mold was not observed anywhere in the building. RH levels varied based on what sections of the HVAC system were functioning at the time. For the most part, RH was below the 60% recommended by the US Army

Center for Health Promotion and Preventive Medicine (currently the US Army Public Health Command) Technical Guide (TG) 277, pg 2 (reference 6). As explained in the TG 277, there is no practical way to eliminate all molds and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.

(3) Building Physical Condition. The building was in fair condition and had clearly been well maintained by on site personnel.

d. Illumination. Lighting measurements were collected throughout the Readiness Center and compared to ANSI/IESNA RP-7-01, Figure A2-1, Industrial Lighting and ANSI/IESNA RP-1-04, Table 2-3, Office Lighting standards (references 7 and 8). Measurements are presented in Appendix C, which show that all areas of the Readiness Center met the recommended values.

6. CONCLUSION. No significant occupational health risks were identified at the Readiness Center. Applying the cited recommendations in this report will enhance regulatory compliance and contribute to the healthfulness of the work environment of this facility.

7. RECOMMENDATION. Service, repair, or replace the inoperable HVAC system (references 3 and 4). **(RAC 4)**

8. ADDITIONAL ASSISTANCE. The technical point of contact is Non-Responsive at (410) 942-0273, ext 4 or Non-Responsive @us.army.mil. For follow up contact the WVARNG Occupational Health Nurse, MAJ Non-Responsive at (304) 561-6324, or Non-Responsive @us.army.mil.

Non-Responsive
Industrial Hygienist

APPROVED BY:

Non-Responsive
NGB Regional Industrial Hygienist

APPENDIX A

REFERENCES

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

2. Title 29 Code of Federal Regulations (29 CFR), Part 1910, 2012 Edition, Occupational Safety and Health Standards, Occupational Safety and Health Administration (OSHA).

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

4. American National Standards Institute (ANSI)/ASHRAE Standard 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

5. Occupational Safety and Health Administration (OSHA), CPL 02-02-58, 29 CFR 1926.62, Lead Exposure in Construction; Interim Final Rule--Inspection and Compliance Procedures, 13 December 1993.

6. United States Army Center for Health Promotion and Preventive Medicine (USACHPPM) Tech Guide 277, Army Facilities Management Information Document on Mold Remediation Issues, February 2002.

7. ANSI/Illuminating Engineering Society of North America (IESNA) RP-1-04, Office Lighting, 2004.

8. ANSI/Illuminating Engineering Society of North America (IESNA) RP-7-01, Industrial Lighting Design, 2001.

APPENDIX B

DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	*Exposure Conditions*			
	<AL	Occasionally>AL Always<OEL	>AL <=OEL	>OEL
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	*Points*
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

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

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

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

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

b. Number of Exposed Personnel Points Assessed

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

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*IPC*
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	*ILLNESS PROBABILITY CODE*			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

APPENDIX C

ILLUMINATION RESULTS

Table. Illumination Results for the ARMORY in Foot Candles (fc).

Location	Range	Geometric Mean	Minimum Standard	Met?
Hallway	21 – 78	47	5	Yes
Foyer	25 – 40	32	10	Yes
Assembly Hall	40 – 61	46	10	Yes
Physical Fitness Room	82 – 137	111	30	Yes
Supply Room	23 – 41	30	30	Yes
Classroom	43 – 150	68	30-50	Yes
Kitchen	50 – 66	56	50	Yes
Offices	50 – 78	60	50	Yes

*ANSI/IESNA RP-1-04 provides a table of acceptable illumination levels. Results that are ±10% of this value are considered to have met the standard.

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




Industrial Hygiene Survey
for WVARNG – Welch Readiness Center
600 Stewart Street
Welch, West Virginia 24801

AECOM
December 2012
Document No.: 60275401.1/Welch Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Welch Readiness Center
600 Stewart Street
Welch, West Virginia 24801

Non-Responsive
Industrial Hygienist

Non-Responsive

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Welch Readiness Center

AECOM

Contents

List of Appendices

List of Tables

Executive Summary

On October 18, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Welch Readiness Center facility located at 600 Stewart Street in Welch, West Virginia. Non-[redacted] SGT was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Welch Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Welch Readiness Center is currently staffed by four personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and an Assembly/Drill Hall.

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

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

The Welch Readiness Center is housed in a one-story masonry building, and consists of approximately 70% administrative space and 30% Assembly Hall.

Lighting levels measured throughout the facility were generally inadequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust in the former fire range indicated lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Welch Readiness Center at the time of the survey.

No visible damaged friable suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed at the Welch Readiness Center.

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

1.0 Facility Description and Operations

The Welch Readiness Center, constructed in 1960, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The lager one-story section consists primarily of offices and administrative areas, and is finished with sheetrock walls, lay-in ceiling tiles and floor tile. The two-story Assembly/Drill Hall area is finished with painted block walls and a concrete floor. According to site personnel there is an indoor firing range located along one side of the Assembly/Drill Hall. Further, the fire range has not been properly decommissioned in accordance with NG PAM 420-15. The fire range is currently used as a storage area.

The primary activity at the Welch Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is frequently rented out for limited civic activities such as group meetings, trade shows, expos, and school activities and to other related local groups and organizations. The Welch Readiness Center is currently staffed by four personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

Six of the nine wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of Housing and Urban Development (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the Fire Range -bullet trap area, Fire Range - stored item, and Fire Range - floor indicated levels of lead in excess of 200 ug/ft^2.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 001	Assembly Hall – bleacher seats	<110 ug/ft^2
Pb – 002	Kitchen - counter	<110 ug/ft^2
Pb – 003	NCO Office - desk top	<110 ug/ft^2
Pb – 004	CO Office - shelf	<110 ug/ft^2
Pb – 005	Administrative Corridor - floor	<110 ug/ft^2
Pb – 006	Former Fire Range - bullet trap area	2,300 ug/ft^2
Pb – 007	Former Fire Range - stored item	1,600 ug/ft^2
Pb – 008	Former Fire Range - floor	1,100 ug/ft^2
Pb – 009	Assembly Hall - floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

The wipe samples collected throughout the facility did not detect levels of lead in excess of the ARNG action level of 200 micrograms per square foot (ug/ft^2) with the exception of the samples collected in the former firing range. Laboratory analytical results are presented in Appendix C.

The indoor fire range, which has not been used since approximately 1980, has not properly decommissioned per NG PAM 420-15 and underwent a surficial conversion into a storage area. Elevated lead wipe data indicates that access to this area should be restricted until the indoor fire range can be properly decommissioned. This action may require all items in this area be properly cleaned and additional samples collected to confirm effectiveness of proper conversion activities and subsequent levels of lead dust.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls and ceilings are coated with paint and appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint at the time of the survey.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Welch Readiness Center during this survey. Thermal system piping observed throughout the facility is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition. AECOM observed a tank in the boiler room that was insulated with suspect asbestos material and appeared to be in fair condition. No exposed or damaged suspect friable ACM was observed on the tank or on the ground around it. Access to the boiler room is limited to maintenance personnel.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion at the time of the survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Welch Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Welch Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
State Maintenance Office	0.6	576	71.2	49.1
Former Fire Range (currently storage area)	0.6	305	70.6	51.1
Table/Chair Storage	0.6	337	70.8	49.6
Supply Room	0.6	407	71.7	49.2

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Boiler Room	1.0	619	81.0	50.0
Men's Locker	1.0	317	74.3	43.5
Men's Restroom	1.0	336	71.5	47.0
Kitchen	0.7	356	72.1	48.9
Classroom	0.4	436	72.8	47.7
Foyer	0.0	416	73.1	46.3
Administrative Corridor	0.0	368	73.5	48.1
Training NCO Office	0.0	316	74.4	49.6
CO Office	0.1	320	73.6	48.7
Assembly/Drill Hall	0.1	314	75.8	49.1
Physical Fitness Room	0.0	319	73.3	46.7

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Welch Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Welch Readiness Center is heated by a boiler that feeds a radiant heating system. Supply and return air is not provided by mechanical means as there is no active ventilation system.

4.1.2 HVAC Maintenance

There was no active HVAC system observed. However, building personnel reported that the boiler is inspected annually and any associated filters changed at least twice a year.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were generally inadequate.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
State Maintenance Office	6.1	N	50
Former Fire Range (currently storage area)	7.1	N	50
Table/Chair Storage	20.7	N	30
Supply Room	22.1	N	30
Boiler Room	4.1	N	30
Men's Locker	23.8	Y	7
Men's Restroom	29.9	Y	5
Kitchen	25.4	N	50
Classroom	24.6	N	30
Foyer	60.7	Y	10
Administrative Corridor	59.3	Y	5
Training NCO Office	27.5	N	50
CO Office	28.1	N	50
Assembly/Drill Hall	22.6	Y	10
Physical Fitness Room	8.9	N	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Welch Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Welch Readiness Center.

AECOM did not observe any damaged, friable suspect asbestos-containing materials at the Welch Readiness Center.

AECOM did not observe peeling lead-based paint at the Welch Readiness Center.

AECOM did not observe evidence of water intrusion at the Welch Readiness Center.

Lighting levels measured throughout the facility were generally inadequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

The wipe samples collected throughout the facility did not detect levels of lead in excess of the ARNG action level of 200 micrograms per square foot (ug/ft^2) with the exception of the samples collected in the former indoor firing range.

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

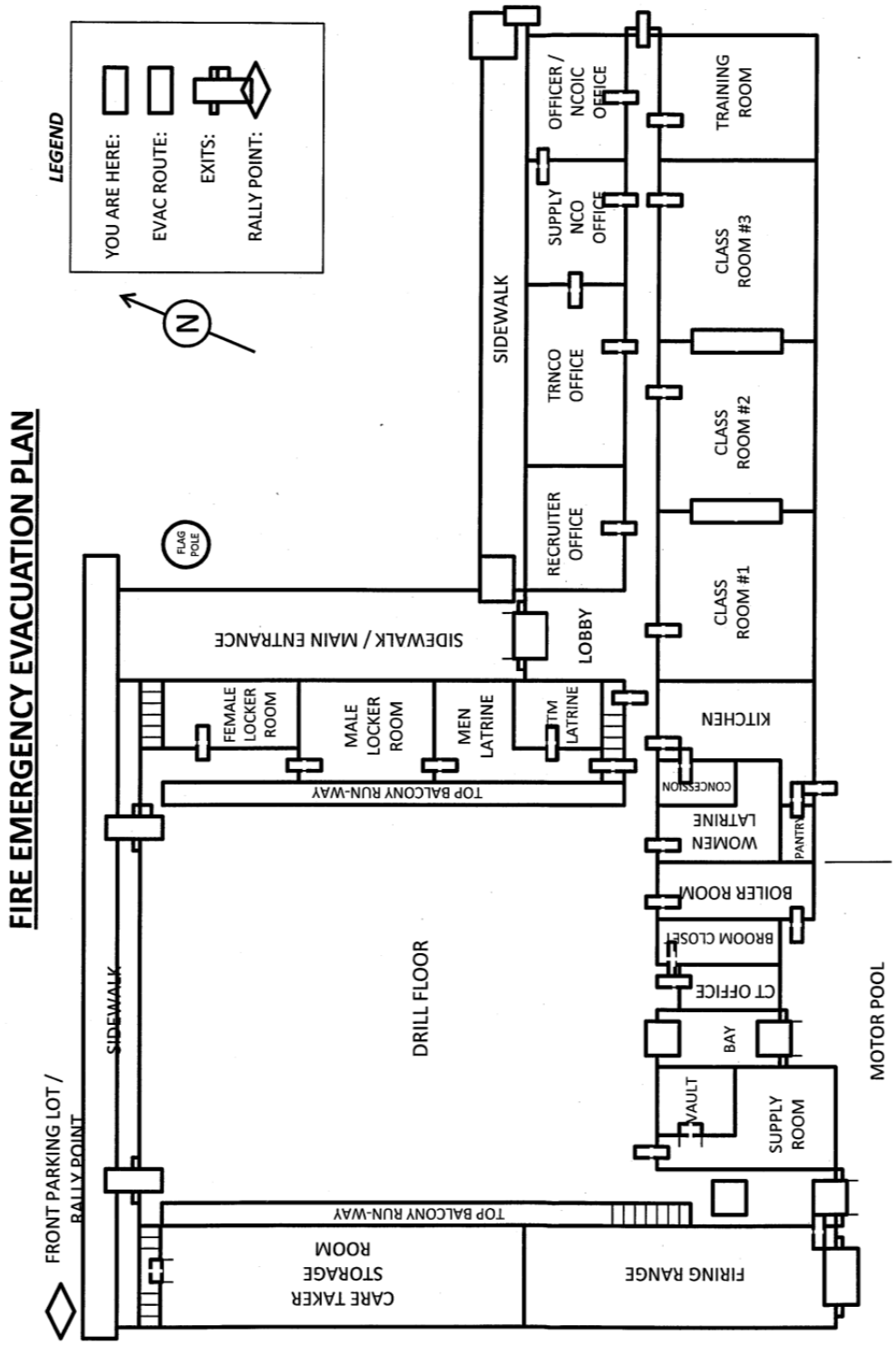
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

Appendix A

Welch Readiness Center Facility Layout

AECOM



Appendix B

Welch Readiness Center Photographs

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Photograph 1

View of Building Exterior

Photograph 2

View of Locker Room

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Photograph 3

View of Former Gun Range

Photograph 4

View of Suspect Pipe Insulation in Fire Range

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Photograph 5

View of Former Bullet Trap

Photograph 6

View of Assembly Hall

AECOM

Photograph 7

View of Lighting System in Assembly Hall

Photograph 8

View of Radiant Heat Unit In Assembly Hall

AECOM

Photograph 9

View of Flammable Storage Cabinets

Photograph 10

View of Kitchen

AECOM

Photograph 11

View of Administrative Corridor

Photograph 12

View of Classroom

AECOM

Photograph 13

View of Recruiter Office

Photograph 14

View of Physical Fitness Room

AECOM

Photograph 15

View of Boiler Room

Photograph 16

View of Suspect Tank Insulation on Tank in Boiler Room

Appendix C

Analytical Results

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Welch RC	Chain Of Custody:	514263		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments
13008297	Pb-001	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008298	Pb-002	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008299	Pb-003	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008300	Pb-004	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008301	Pb-005	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
13008302	Pb-006	Flame	Wipe	****	0.111	110 ug/ft²	260	2300 ug/ft²	
13008303	Pb-007	Flame	Wipe	****	0.111	110 ug/ft²	180	1600 ug/ft²	
13008304	Pb-008	Flame	Wipe	****	0.111	110 ug/ft²	120	1100 ug/ft²	
13008305	Pb-009	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

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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:	Welch RC	Chain Of Custody:	514263
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012 Report Date: 10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

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

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)
%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results
Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

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

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

Analyst: Non-Responsive

Technical Manager: Non-Responsive

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514263

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

Submittal Information:
(1) Job Name: WEACH RC
(2) Job Location: West Virginia
3. Job #: PO #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ ph Non-Responsive
5. Submitted by: AECOM (Signature)

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and [illegible] to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive @aecom.com
Comments:	☐ 2 Day (Date Due) 10/30/12	☐ Fax: @us.army.mil
		☐ Verbal Non-Responsive @us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk:
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

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

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

Metals Analysis
☐ Pb Paint Chip (QTY)
☒ *Pb Dust Wipe (wipe type Ghost) 9 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION: SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/30/12 @ 1000 Via: FedEx By (Print): Non-Responsive Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/10/12
Job Number: 60275421
Contact Person: Non-Responsive

Job Name: WELCH RC
Job Location: WEST VIRGINIA
Address: 600 Stewart ST
Welch, WV

Company: AECOM
Page 1 of
Phone Number: 3154320[illegible]
Collected By: Non-Responsive
COC Number: —

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	BLEACHER	1 in^2	GHEST WIPE
Pb-002	KITCHEN	Counter		
Pb-003	NCO OFFICE	Desk		
Pb-004	CO OFFICE	Cabinet		
Pb-005	Corridor	Floor		
Pb-006	Former RANGE	Bullet Trap		
Pb-007	"	stored item ~~Off Heater~~		
Pb-008	"	Floor ~~Stored Item~~		
Pb-009	OUTSIDE RANGE (Drill Hall)	Floor	"	"

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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

17. OSHA Instruction Letter 02-02-058, Lead Exposure in Construction, Office of Health Compliance Assistance, 13 December 1993.

18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

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NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 07 July 2004

MEMORANDUM FOR WVARNG, Welsh Readiness Center, ATTN: SFC Non-Responsive
Non-R I 600 Stewart Street, Welsh, WV 24801-2199

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive

Encl

Regional Industrial Hygienist

CF: OHM, MAJ Non-Responsive

National Guard Armory
Welsh Readiness Center, Welsh, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Materials (pipe insulation) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials. **RAC - 5**
- Water damage was observed at the armory. The source of the water damage was likely from condensation due to poor ventilation. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent mold growth that may lead to indoor air quality problems. **RAC - 5**
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. It may be appropriate to remove the bullet trap and light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until

the area and items have been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible. **RAC - 4**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE

WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD

OTSG APPROVED (Date)

DIRECTORATE Welsh Armory

BLDG/ROOM Welsh

SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study

JOB DESCRIPTION/SERIES Military/Administrative Operations

SAMPLING DATE December 4, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.004	<0.004	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive dustrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (*For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility*)

NAME: Non-Responsive 12/4/2003

SSN: Non-Responsive

UNIT PHONE NO: 304-436-2557

		HISTORY/PHYSICAL		FLOW CHART	
		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)	
		DIAGNOSTIC STUDIES		TREATMENT	

DA FORM 4700

HSXR-APG-Z OP 32 1 Jan 90

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw Environmental, Inc.

National Guard Armory
Welsh Readiness Center – Welsh, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Welsh Readiness Center – Welsh, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Welsh Readiness Center in Welsh, West Virginia. Non-Responsive performed the evaluation on 04 December 2003. The point of contact at the readiness center was caretaker Non-Responsive and SFC Non-Responsive The military unit was deployed on the date of the survey.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality

- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (pipe insulation) suspected of containing asbestos were observed. An operations and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from condensation due to poor ventilation. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in most of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. It may be appropriate to remove the bullet trap and light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and

employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Welsh Readiness Center in Welsh, West Virginia. Non-Responsive performed the evaluation on 04 December 2003. The point of contact at the readiness center was caretaker Non-Responsive and SFC Non-Responsive The military unit was deployed on the date of the survey.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any results above acceptable levels from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary. Since results were below acceptable levels from the drill/assembly hall, the other samples were not submitted for analysis.

However, wipe sampling for lead revealed a concentration above a level of 40 $\mu g/ft^2$ in the assembly hall and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on one (1) full-time building occupant. In addition, a general sample was taken in the Training NCO office. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory on the officer's latrine ceiling. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. Bulk sampling results revealed that the lead concentration was below 0.5 percent by weight. Since HUD does not consider the paint a lead-based paint, no actions are necessary. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing material was pipe insulation observed in the boiler room (approximately four pipe joints or elbows) and the kitchen (approximately four pipe joints or elbows). It is assumed that asbestos containing insulation is in the pipe joints/elbows throughout the facility. The condition of the pipe insulation materials was considered good (no rips, tears, or other damage).

An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage and possible mold on the ceiling of the maintenance common room (shower room). Water damage was observed in the officer's latrine/shower room on the ceiling.

The source of the water damage was likely from condensation due to poor ventilation in those rooms. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interviews with employees and measurements for carbon dioxide, humidity, and temperature revealed no indoor air quality concerns at the armory. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 4.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation

- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements. Note that the maintenance bay is only used on drill weekends for minor repair activities (oil changes, etc.); therefore, the hearing conservation, respiratory protection, and PPE programs are not applicable.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in most areas, including the officer's latrine/locker room, kitchen, classrooms, training room, and AST office.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The range was converted into a maintenance bay. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 30 micrograms lead per square foot ($\mu g/ft^2$);
- floor in the office area at 37 $\mu g/ft^2$;
- stored item (filing cabinet top surface) at 32 $\mu g/ft^2$;
- light fixture at 18000 $\mu g/ft^2$; and
- bullet trap at 52000 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). It may be appropriate to remove the bullet trap and light fixtures due to the high lead levels. In addition, stored items should be wet-wiped before being removed from the area. Access to the area should be limited, and employees should not be allowed to work in this area without protective clothing until the area and items have been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, housekeeping, ergonomic concerns, indoor air quality, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, visible mold, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Welsh, West Virginia
Date of Sampling: 04 December 2003

Sample Number	Location	Results, µg/ft² [a]
WVWAL338-1	Assembly room Supply Room serving counter top surface (See Building Layout -- Appendix B)	9.9
WVWAL338-2	Assembly room – bleacher surface (See Building Layout – Appendix B)	8.1
WVWAL338-3	Assembly room -- fire extinguisher top surface (See Building Layout -- Appendix B)	72
WVWAL338-4	Assembly room -- bleacher surface (See Building Layout – Appendix B)	11
WVWAL338-5	Assembly room soda machine top surface (See Building Layout - Appendix B)	36
WVWAL338-6	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone/General Air Samples for Lead
National Guard Armory
Welsh, West Virginia
Date of Sampling: 04 December 2003

Sample Number	Employee/ General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVWAL338-A1	Non-Responsive	0924-1107/103	2.4786	255.30	<0.004
WVWAL338-A2	Training NCO Office	0925-1107/102	2.4128	246.10	<0.004
WVWAL338-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Welsh, West Virginia
Date of Sampling: 04 December 2003

Sample Number	Location	Results, % By Weight
WVWAL338-PC1	Officer's Latrine - ceiling	0.096

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4

Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature

National Guard Armory

Welsh, West Virginia

Date of Sampling: 04 December 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor Drill Hall	1	592	42.9	68.7
Outdoors	-	523	52.2	45.3

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Welsh, West Virginia

Date of Sampling: 04 December 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Men's Latrine	30.5-56.3	40	Some Areas
Officer's Latrine/Locker Room	22.1-35.4	40	No
Kitchen	16.1-30.5	70	No
Classrooms	13.25-38.9	70	No
Training Room	9.48-29.8	70	No
Main Hallway	23.1-76.4	7.5	Yes
AST Office	11.2-31.6	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Welsh, West Virginia

Date of Sampling: 04 December 2003

Sample Number	Location	Results, µg/ft² [a]
WVWAL338-7	Outside the range	30
WVWAL338-8	Floor	37
WVWAL338-9	Stored Item (filing cabinet top surface)	32
WVWAL338-10	Light Fixture	18000
WVWAL338-11	Bullet Trap	52000
WVWAL338-12	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Welsh Armory West Virginia	Welsh

OCATION/CODE	OPERATION/CODE
Administrative Area/AA	Administrative Operations/ADO

URVEY DATE	EVALUATOR (Initials)
04 December 2003	Non-Respons

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	unknown

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 436 2557	Detachment 1 HHC 1/150th	4	8

NO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1	4	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
1	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U
ACID		
COLD SURFACES		
HOT SURFACES		
NBC AGENTS		
OIL		
SOLVENTS		
SURGICAL GLOVES		

RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
AIRLINE				
ABRASIVE BLASTING HOOD				
DISPOSABLE				
FULL FACE AIR PURIFYING				
1/2 FACE AIR PURIFYING				
POWERED AIR PURIFYING				
1/4 FACE AIR PURIFYING				
SELF CONTAINED				

EYES/FACE	R	U
CHEMICAL SPLASH		
FULL FACE SHIELD		
CHEMICAL/SAFETY		
SAFETY/IMPACT		
WELDING HELMET		

HEARING	R	U
CANAL CAPS		
EAR PLUGS		
HELMETS		
MUFFS		
MUFF/EARPLUG COMBO		
MUFF/EARPLUG W/TIME LIMIT		

BODY	R	U
APRONS		
COLD WEATHER CLOTHING		
COVERALLS		
FULL BODY SUIT		
HEAT REFLECTIVE VEST/SUIT		
SAFETY BELT/HARNESS		

HEAD/FIT	R	U
COLD WEATHER BOOTS/HATS		
HARD HATS		
IMPERMEABLE BOOTS		
SAFETY/CONDUCTIVE SHOES		
SAFETY/NON-CONDUCTIVE SHOES		

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
7439-92-1	Lead Inorganic dusts (Fumes as Pb	2-moderate	C-Uncontrolled Respiratory
1332-22-5	Asbestos (other)	↓	↓

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAILABLE	MIL
			↓	Non-Responsive	↓
				NOT AVAILABLE	
			↓	↓	CIV

SECTION 6. COMMENTS

No comments See attached sheet

Survey conducted by Non-Responsive Building contains 1 civilian caretaker and 4 (four) military employees. Military employees perform mainly administrative functions. Please note that 3 of the 4 military employees were deployed on the date of the survey.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

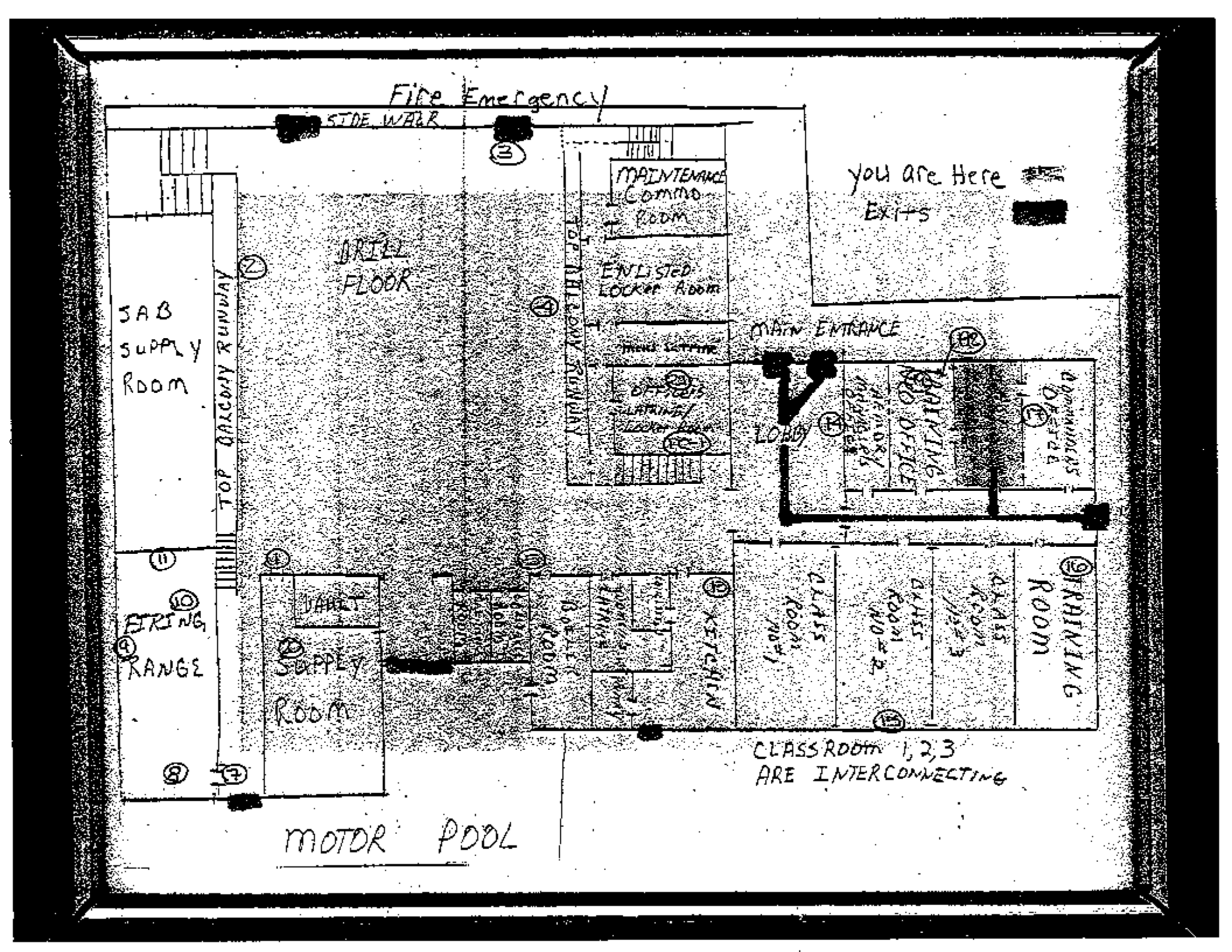
Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

The full time personal at Detachment 1 HHC 1/150Th are as follows

S Non-Responsive (Deployed to Irag
S ved to Irag)
S ed at armory
M r< Located at armory)
S CARETAKER Deployed Iraq

Non-Responsive

Appendix B
Building Layout


Fire Emergency
SIDE WALK
DRILL FLOOR
MAINTENANCE Comms Room
ENLISTED LOCKER ROOM
TOP GALLERY RUNWAY
you are Here
Exits
MAIN ENTRANCE
LOBBY
BRIG
OFFICES
SAB Supply Room
TOP GALLERY RUNWAY
FIRING RANGE
VAULT
Supply Room
TRAINING Room
CLASS ROOM #1
CLASS ROOM #2
CLASS ROOM #3
CLASSROOM 1, 2, 3 ARE INTERCONNECTING
MOTOR POOL

Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVWAL338	**Chain Of Custody:**	121257
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Welsh, WV	**Date Analyzed:**	12/22/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	22-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413539	WVWAL338-1	Furnace	Wipe	****	0.111	2.70	ug/ft²	9.9	ug/ft²	
0413540	WVWAL338-2	Furnace	Wipe	****	0.111	2.70	ug/ft²	8.1	ug/ft²	
0413541	WVWAL338-3	Furnace	Wipe	****	0.111	67.51	ug/ft²	72	ug/ft²	
0413542	WVWAL338-4	Furnace	Wipe	****	0.111	2.70	ug/ft²	11	ug/ft²	
0413543	WVWAL338-5	Furnace	Wipe	****	0.111	6.75	ug/ft²	36	ug/ft²	
0413544	WVWAL338-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413545	WVWAL338-7	Furnace	Wipe	****	0.111	6.75	ug/ft²	30	ug/ft²	
0413546	WVWAL338-8	Furnace	Wipe	****	0.111	6.75	ug/ft²	37	ug/ft²	
0413547	WVWAL338-9	Furnace	Wipe	****	0.111	6.75	ug/ft²	32	ug/ft²	
0413548	WVWAL338-10	Flame	Wipe	****	0.111	108.01	ug/ft²	18000	ug/ft²	
0413549	WVWAL338-11	Flame	Wipe	****	0.111	108.01	ug/ft²	52000	ug/ft²	
0413550	WVWAL338-12	Furnace	Wipe	****	N/A	0.30	ug	< 0.3	ug	

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

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

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

An AIHA (#3863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory
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DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAPOR329-A1 through WVWIL335-A3
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-6027
DCL Sample ID No.:	03-35454 through 03-35502
Sample Receipt Date:	12/11/2003
Preparation Date:	12/15/03
Analysis Date:	12/15/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

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Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
VAPOR329-A1	03-35454	362.12	ND	<0.003
VAPOR329-A2	03-35455	355.29	ND	<0.003
VAPOR329-A3	03-35456	0	ND	-
VAVIR329-A1	03-35462	241.75	ND	<0.004
VAVIR329-A2	03-35463	239.35	ND	<0.004
VAVIR329-A3	03-35464	0	ND	-
WVWAL338-A1	03-35466	255.30	ND	<0.004
WVWAL338-A2	03-35467	246.10	ND	<0.004
WVWAL338-A3	03-35468	0	ND	-
WVBLU338-A1	03-35470	340.39	ND	<0.003
WVBLU338-A2	03-35471	326.60	ND	<0.003
WVBLU338-A3	03-35472	0	ND	-
VAGAT337-A1	03-35473	243.02	ND	<0.004
VAGAT337-A2	03-35474	254.11	ND	<0.004
VAGAT337-A3	03-35475	0	ND	-
VAHAM330-A1	03-35476	250.47	ND	<0.004
VAHAM330-A2	03-35477	255.99	ND	<0.004
VAHAM330-A3	03-35478	0	ND	-
VABIG336-A1	03-35479	343.24	ND	<0.003
VABIG336-A2	03-35480	307.31	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		96.	
% Recovery	LCS 2		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VABIG336-A3	03-35481	0	ND	-
WVHIN339-A1	03-35486	238.94	ND	<0.004
WVHIN339-A2	03-35487	237.41	ND	<0.004
WVHIN339-A3	03-35488	0	ND	-
WVMON335-A1	03-35489	283.66	ND	<0.004
WVMON335-A2	03-35490	288.02	ND	<0.003
WVMON335-A3	03-35491	0	ND	-
WVRIC339-A1	03-35495	299.70	ND	<0.003
WVRIC339-A2	03-35496	296.83	ND	<0.003
WVRIC339-A3	03-35497	0	ND	-
VACED337-A1	03-35498	243.02	ND	<0.004
VACED337-A2	03-35499	254.11	ND	<0.004
VACED337-A3	03-35500	0	ND	-
WVWIL335-A1	03-35501	247.64	ND	<0.004
WVWIL335-A2	03-35502	0	ND	-
WVWIL335-A3	03-35503	252.18	ND	<0.004
	Prep Blank		ND	
% Recovery	LCS 3		101.	
% Recovery	LCS 4		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:**
Date:

Sample 1

Sample Number: WVWAL338-A1
Pump: 647015

	Pre Flow Rate	Post Flow Rate
	2481	2478
	2483	2478
Average	2472	2473
Average Pre and Post	2476	2488
	~~2477~~ 2478	2479

Time 1 0924
Time 2 1107
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2

Sample Number:
Pump:

	Pre Flow Rate	Post Flow Rate
	2409	2422
	2401	2428
Average	2397	2431
Average Pre and Post	2398	2414
	2402	2424

Time 1 0925
Time 2 1107
Total Time Sampled
Minutes Sampled

Volume **Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Welsh
Date: 12/4/2003

Sample 1

Sample Number: WVWAL338-A1
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.481	2.478
	2.483	2.478
	2.472	2.473
	2.476	2.488
Average	**2.478**	**2.479**

Average Pre and Post **2.4786**

Time 1	9:24
Time 2	11:07
Total Time Sampled	**1:43**
Minutes Sampled	103.00

Volume **255.30 Liters**

Sample 2

Sample Number: WVWAL338-A2
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.409	2.422
	2.401	2.428
	2.399	2.431
	2.398	2.414
Average	**2.402**	**2.424**

Average Pre and Post **2.4128**

Time 1	9:25
Time 2	11:07
Total Time Sampled	**1:42**
Minutes Sampled	102.00

Volume **246.10 Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAPOR329-PC1 through WVMON335-PC2
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-6027
DCL Sample ID No.:	03-35457 through 03-35493
Sample Receipt Date:	12/11/2003
Preparation Date:	12/16/2003
Analysis Date:	12/17/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

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Non-Responsive
Analyst

Non-Responsive
Reviewer

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800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
VAPOR329-PC1	03-35457	64.	0.0064
VAPOR329-PC2	03-35458	ND	ND
VAPOR329-PC3	03-35459	87.	0.0087
VAVIR329-PC1	03-35465	ND	ND
WVWAL338-PC1	03-35469	960.	0.096
VABIG336-PC1	03-35482	ND	ND
VABIG336-PC2	03-35483	29.	0.0029
WVMON335-PC1	03-35492	ND	ND
WVMON335-PC2	03-35493	ND	ND
	Prep Blank	ND	
% Recovery	LCS	87.	
% Recovery	35493 MS	94.	
% Recovery	35493 MSD	94.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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Shaw® Shaw Environmental, Inc.

National Guard Armory
Weston Readiness Center – Weston, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

4 February 2004

National Guard Armory
Weston Readiness Center – Weston, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

4 February 2004

Prepared by: Non-Responsive
Industrial Hygienist

Reviewed by: Non-Responsive
Business Line Manager

Table of Contents

List of Tables

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Weston Readiness Center in Weston, West Virginia Non-Responsive performed the evaluation on 29 October 2003. The point of contact at the readiness center was SFC Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Suspected Asbestos Containing Material
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Bulk sampling results revealed lead in paint. Anyone who may perform repair and/or maintenance activities on surfaces coated with lead-based paint should be made aware of the presence of the lead-based paint so appropriate precautions (control of exposures, personal protective equipment, training, etc.) can be taken. Please note that, due to the results of the lead wipe sample taken from the bullet trap wall, the paint chip sample result is likely representative of the lead residue remaining on the wall rather than the paint lead content, but this was not confirmed.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks (maintenance room/office and shower room) or condensation due to lack of proper ventilation (shower room). The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the source of the mold should be identified and actions taken to eliminate the source of the mold.
- Interviews with employees revealed that a soldier has been diagnosed with carpal tunnel syndrome in both of his hands due to computer use over several years. A comprehensive ergonomic evaluation should be conducted at this armory in order to determine in the work stations can be modified in order to eliminate or minimize the ergonomic concerns.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in any of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by

replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. Items that cannot be cleaned, such as the bullet trap and light fixtures, should be removed. In addition, stored items should be wet- wiped before being removed from the area. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). Access to these areas should be limited, and employees should not be allowed to work in these areas without protective clothing until the areas have been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Weston Readiness Center in Weston, West Virginia. Non-Responsive performed the evaluation on 29 October 2003. The point of contact at the readiness center was SFC Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary.

However, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall and the converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees: therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed in the armory on the maintenance bay (converted firing range) ceiling and the bullet trap wall. The Department of Housing and Urban Development (HUD) defines lead-based paint as paint or other surface coatings that contain lead equal to or 0.5 percent by weight. The ceiling sample was below 0.011 percent by weight. However, bulk sampling results for the bullet trap wall sample revealed a lead concentration of 7.10 percent by weight. Please note that, due to the results of the lead wipe sample taken from the bullet trap wall, the paint chip sample result is likely representative of the lead residue remaining on the wall rather than the paint lead content, but this was not confirmed. Therefore, anyone who may perform repair and/or maintenance activities on surfaces coated with lead-based paint should be made aware of the presence of the lead-based paint so appropriate precautions (control of exposures, personal protective equipment, training, etc.) can be taken. The results of the sampling are provided in Table 3.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were not observed.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed mold in the form of wood rot and water damage on and around the window frame in room 101. Water damage not

accompanied by mold was observed on the ceilings in the maintenance room/office and officer's shower room (room 127).

The source of the water damage in the maintenance room/office was likely from roof leaks, while the source in the shower room is likely from roof leaks or condensation due to lack of proper ventilation. The water damage in Room 101 has been fixed, however the wooden frame of the window has not been replaced. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the source of the mold should be identified and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees revealed that SFC Johnny Fletcher has been diagnosed with carpal tunnel syndrome in both of his hands due to computer use over several years. A comprehensive ergonomic evaluation should be conducted at this armory in order to determine in the work stations can be modified in order to eliminate or minimize the ergonomic concerns.

2.3.2 Indoor Air Quality

Interview with employees and measurements for carbon dioxide, humidity, and temperature revealed no indoor air quality concerns at the armory. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in any of the locations measured, including the supply room (office area), classroom, day room, room #122 (office), drill hall, maintenance bay (work area), and enlisted men's locker room.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The space was converted into a maintenance bay used primarily on drill weekends for routine/minor vehicle maintenance activities. The caretaker stated that the firing range was cleaned previously when the sand was removed. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 20 micrograms lead per square foot ($\mu g/ft^2$);
- floor in the office area at 49 $\mu g/ft^2$;
- bullet trap floor at 2400 $\mu g/ft^2$;
- bullet trap wall at 940 $\mu g/ft^2$.
- light fixture at 1400 $\mu g/ft^2$; and
- stored item (flammable cabinet top surface) at 27 $\mu g/ft^2$.

The lead levels at three of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. Items that cannot be cleaned, such as the bullet trap and light fixtures, should be removed. In addition, stored items should be wet- wiped before being removed from the area. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). Access to these areas should be limited, and employees should not be allowed to work in these areas without protective clothing until the areas have been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, suspected asbestos-containing material, indoor air quality, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, peeling lead-based paint, water damage, visible mold, ergonomic concerns, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Weston, West Virginia
Dates of Sampling: 29 October 2003

Sample Number	Location	Results, µg/ft² [a]
WVWES302-7	Assembly Room - soda machine top surface (See Building Layout - Appendix B)	8.8
WVWES302-8	Assembly Room – serving counter (supply/storage room) (See Building Layout -- Appendix B)	13
WVWES302-9	Assembly Room – bleacher surface (See Building Layout Appendix B)	10
WVWES302-10	Assembly Room – exit sign top surface (adjacent to converted firing range) (See Building Layout - Appendix B)	80
WVWES302-11	Assembly Room - exit sign top surface (adjacent to lobby) (See Building Layout - Appendix B)	36
WVWES302-12	Field Blank	0.41 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Weston, West Virginia
Date of Sampling: 29 October 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVWES302-A1	Non-Responsive	0755-1018/143	2.4664	352.69	<0.003
WVWES302-A2		0800-1011/131	2.5179	329.84	<0.003
WVWES302-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Peeling Paint Sampling for Lead
National Guard Armory
Weston, West Virginia
Date of Sampling: 29 October 2003

Sample Number	Location	Results, % By Weight
WVWES302-PC1	Drill Hall -- floor	0.011
WVWES302-PC2	Drill Hall – Wall adjacent to power breaker box	7.1

The Department of Housing and Urban Development (HUD) defines lead-based as paint or other surface coatings that contain lead equal to or exceeding 0.5 percent by weight.

Table 4
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Weston, West Virginia
Date of Sampling: 29 October 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor -- Classroom 1	1	614	42.2	73.2
Outdoors	-	497	64.5	51.3

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 5

Illumination Readings

National Guard Armory

Weston, West Virginia

Date of Sampling: 29 October 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Supply Room (office area)	19.8-61.8	70	No
Classroom	18.7-40.3	70	No
Day Room	25.3-43.2	70	No
Office #122	49.1-65.3	70	No
Drill Hall	14.9-59.3	70	No
Enlisted Men's Locker Room	7.9-30.1	40	No
Maintenance Bay (workbench)	14.3-48.1	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 6

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Weston, West Virginia

Date of Sampling: 29 October 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVWES302-t3	Floor Outside of Range	20
WVWES302-t4	Floor	49
WVWES302-t5	Bullet Trap Floor	2400
WVWES302-t6	Bullet Trap Wall	940
WVWES302-t7	Light Fixture	1400
WVWES302-t8	Blank	0.42 µg
WVWES302-t9	Stored Item - flammable cabinet top	27

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Weston Armory West Virginia ARNG	Weston

OCATION/CODE	OPERATION/CODE
Administrative Areas/ AA	Administrative Operations/ ADO

URVEY DATE	EVALUATOR (Initials)
29 October 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive SFC

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304-269-3891	1092 Engineer Battalion	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO.OTHER
1	4	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3 - low	D - Uncontrolled Physical
7439-92-1	Lead, Inorganic Dust & Fumes, as Pb	2 - moderate	C - Uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive		F	M	[illegible]	MIL
		D	↓	↓	↓
		G			
		K			CIV
			↓	↓	CIV *

SECTION 6. COMMENTS

Non-Responsive See attached sheet 3

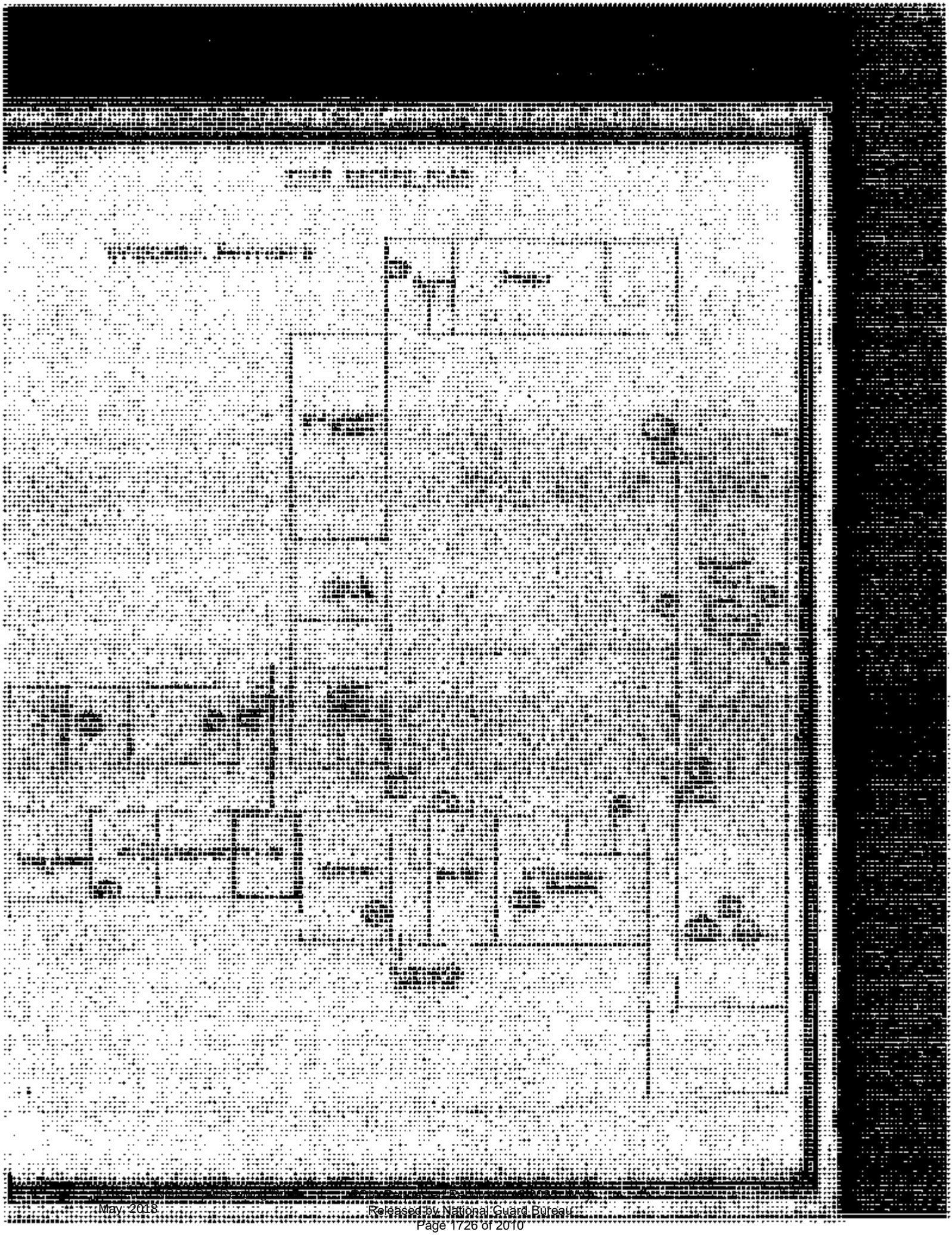
Survey conducted by [redacted] military staff, and [illegible] caretaker. Building contains 4 full-time employees perform mainly administrative functions. Please note caretaker present at date of survey is acting caretaker.

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout



Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Weston	**Chain Of Custody:**	110252
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	19-Nov-03
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
0408478	WVWES302-7	Furnace	Wipe	****	0.111	2.70	ug/ft^2	8.8	ug/ft^2	
0408479	WVWES302-8	Furnace	Wipe	****	0.111	2.70	ug/ft^2	13	ug/ft^2	
0408480	WVWES302-9	Furnace	Wipe	****	0.111	2.70	ug/ft^2	10	ug/ft^2	
0408481	WVWES302-10	Furnace	Wipe	****	0.111	33.75	ug/ft^2	80	ug/ft^2	
0408482	WVWES302-11	Furnace	Wipe	****	0.111	5.40	ug/ft^2	36	ug/ft^2	
0408483	WVWES302-12	Furnace	Wipe Blank	****	N/A	0.30	ug	0.41	ug	
0408484	WVWES302-13	Furnace	Wipe	****	0.111	5.40	ug/ft^2	20	ug/ft^2	
0408485	WVWES302-14	Furnace	Wipe	****	0.111	5.40	ug/ft^2	49	ug/ft^2	
0408486	WVWES302-15	Flame	Wipe	****	0.111	108.01	ug/ft^2	2400	ug/ft^2	
0408487	WVWES302-16	Flame	Wipe	****	0.111	108.01	ug/ft^2	940	ug/ft^2	
0408488	WVWES302-17	Flame	Wipe	****	0.111	108.01	ug/ft^2	1400	ug/ft^2	
0408489	WVWES302-18	Furnace	Wipe Blank	****	N/A	0.30	ug	0.42	ug	
0408490	WVWES302-19	Furnace	Wipe	****	0.111	5.40	ug/ft^2	27	ug/ft^2	

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:**	Weston	**Chain Of Custody:**	119252
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI. State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 2107X	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsi				

Summary of Atomic Absorption Analysis for Lead

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

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

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

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory Location: Weston
Date: 10/29/03

Sample 1

Sample Number: WVWES302-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.472	2.464
	2.475	2.455
	2.466	2.459
	2.477	2.463
Average	2.473	2.460

Average Pre and Post 2.4664

Time 1 7:55
Time 2 10:18
Total Time Sampled 2:23
Minutes Sampled 143.00

Volume 352.69 Liters

Sample 2

Sample Number: WVWES302-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.545	2.48
	2.547	2.494
	2.542	2.5
	2.537	2.498
Average	2.543	2.493

Average Pre and Post 2.5179

Time 1 8:00
Time 2 10:11
Total Time Sampled 2:11
Minutes Sampled 131.00

Volume 329.84 Liters

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** WESTON
Date: 10/29/05

Sample 1
Sample Number: WVWES302-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2464	2472
	2455	2475
	2459	2466
Average	2463	2477
Average Pre and Post	2460	2473

Time 1 0755
Time 2 1018
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2
Sample Number: WVWES302-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2545	2480
	2547	2494
	2542	2500
Average	2537	2498
Average Pre and Post	2543	2493

Time 1 0800
Time 2 1011
Total Time Sampled
Minutes Sampled

Volume **Liters**

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVKIN312-PC1 hrough WVHUN309-PC1
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Paint Chip
Method Reference:	3050B/6010B
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33113 through 03-33136
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/2003
Analysis Date:	11/13/2003

The samples were prepared in accordance with EPA method 3050B. Sample condition was acceptable upon receipt except where noted. The samples were then analyzed in accordance with EPA method 6010B using a Jarrell Ash Trace ICP.

The results are provided in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

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Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	mg/Kg (ppm)	% by weight
WVKIN312-PC1	03-33113	170.	0.017
WVCLA302-PC1	03-33114	ND	ND
VWBUC301-PC1	03-33115	33.	0.0033
VWBUC301-PC2	03-33116	76.	0.0076
VWBUC301-PC3	03-33117	ND	ND
WVGAS310-PC1	03-33119	64.	0.0064
WVELK301-PC1	03-33120	68.	0.0068
WVELK301-PC2	03-33121	1700.	0.17
WVKEY300-PC1	03-33124	1400.	0.14
VWKEY300-PC2	03-33125	1800.	0.18
WVWES708-PC1	03-33129	110.	0.011
WVWES708-PC2	03-33130	71000.	7.1
WVFAI303-PC1	03-33131	54.	0.0054
WVSAI303-PC1	03-33133	900.	0.090
WVSAI303-PC2	03-33134	250.	0.025
WVSAI303-PC3	03-33135	1200.	0.12
WVHUN309-PC1	03-33136	ND	ND
	Prep Blank	ND	
% Recovery	LCS	82.	
% Recovery	32912MS	87.	
% Recovery	32912MSD	89.	
RPL		25.	0.0025

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.
MS/MSD = matrix spike/matrix spike duplicate.

Non-Responsive [redacted]

Analyst

Non-Responsive [redacted]

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Weston Readiness Center
40 Armory Road
Weston, West Virginia 26452

AECOM
December 2012
Document No.: 60275401.1/Weston Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Weston Readiness Center
40 Armory Road
Weston, West Virginia 26452

Non-Responsive

Non-Responsive

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Weston Readiness Center

AECOM

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Executive Summary

On October 16, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Weston Readiness Center facility located at 40 Armory Road in Weston, West Virginia. Non-R, SFC was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Weston Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Weston Readiness Center is currently staffed by four personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and an Assembly/Drill Hall.

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

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

The Weston Readiness Center is housed in a one-story masonry building, and consists of approximately 40% administrative space and 60% Assembly Hall.

Lighting levels measured throughout the facility were generally adequate as per American National standards Institute (ANSI) / Illuminating Engineering Society of North America (IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust throughout the facility indicated lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Weston Readiness Center except for one section of the building damaged by a recent (July 2012) rain storm. The damage was limited to the female restroom/shower/locker room area and adjoining corridor.

No visible damaged suspect friable asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed at the Weston Readiness Center except for the one section of the building damaged by a recent (July 2012) rain storm. Mold growth was observed on the walls and ceilings in the water damaged area of the building.

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

1.0 Facility Description and Operations

The Weston Readiness Center, constructed in 1960, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The larger one-story section consists primarily of offices and administrative areas, and is finished with sheetrock walls, lay-in ceiling tiles and floor tile. The two-story Assembly/Drill Hall area is finished with painted block walls and a concrete floor. According to site personnel there is a former firing range at the facility.

The primary activity at the Weston Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is not currently, but may in the future be, rented out for limited civic activities such as group meetings, trade shows and to other related local groups and organizations. The Weston Readiness Center is currently staffed by four personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 001	Assembly Hall - table	<110 ug/ft^2
Pb – 002	Kitchen - counter	<110 ug/ft^2
Pb – 003	CO Office - desk top	160 ug/ft^2
Pb – 004	CO Office - shelf	<110 ug/ft^2
Pb – 005	Administrative Corridor - floor	<110 ug/ft^2
Pb – 006	Storage (Former Firing Range - bullet trap area)	<110 ug/ft^2
Pb – 007	Storage (Former Firing Range – table)	430 ug/ft^2
Pb – 008	Storage (Former Firing Range – floor)	300 ug/ft^2
Pb - 010	Assembly Hall - floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Six of the nine wipe samples collected in association with most administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the CO Office - desk top, former Firing Range - table, and former Firing Range - floor indicated levels of lead in excess of 200 ug/ft^2. The former firing range has had the associated parts (ie. bullet trap) removed. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls and ceilings are coated with paint and appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did observe limited damaged and peeling paint in the woman's locker room, women's restroom/shower, men's restroom, and the adjoining corridor. The peeling paint was caused by water intrusion caused by a recent (July 2012) rain storm that lifted a portion of the roof. The damaged paint in these rooms is approximately 1,800 square feet. A representative paint chip sample was collected in this area. The sample was found to contain <0.0074% lead, which is below the reporting level. Laboratory analytical results are presented in Appendix C.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Weston Readiness Center during this survey. Thermal system piping is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM observed evidence of water intrusion during this survey in the female locker room, restroom/shower area and the adjoining corridor. Visible mold growth was observed during the survey. Water intrusion is a mold growth risk factor.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Weston Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Weston Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Administrative Corridor	0.6	320	74.4	43.7
Day Room	0.6	288	75.0	42.6

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Orderly Room	0.6	275	74.1	40.2
Classroom	0.6	327	75.1	44.2
Break Room	0.4	335	75.8	41.2
Foyer	0.4	342	75.8	42.8
Kitchen	0.6	351	75.7	42.8
Assembly Hall	0.6	340	75.2	42.1
State Maintenance Office	0.6	347	75.3	43.2
Men's Restroom	0.6	345	75.5	44.6
Women's Corridor	0.4	350	74.9	45.1
Women's Locker Room	0.4	361	74.8	47.2
Fire Range	0.5	272	75.8	45.8

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Weston Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Weston Readiness Center is heated by a boiler that feeds a radiant heating system. Supply and return air is not provided by mechanical means as there is no active ventilation system that would be subject to contamination.

4.1.2 HVAC Maintenance

There was no active HVAC system observed. However, building personnel presumed that the boiler is inspected annually and any associated filters changed on an as-needed basis.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were generally adequate with the exception of the three areas noted below.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Administrative Corridor	39.2	Y	5
Day Room	29.2	Y	10
Orderly Room	47.8	N	50
Classroom	50.6	Y	30
Break Room	48.3	Y	10
Foyer	36.9	Y	10
Kitchen	136.4	Y	50
Assembly Hall	22.1	Y	10
State Maintenance Office	72.8	Y	50
Men's Restroom	31.2	Y	5
Women's Corridor	26.4	Y	5
Women's Locker Room	25.1	Y	7
Fire Range	20.3	Y	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Weston Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Weston Readiness Center.

AECOM did not observe any damaged, suspect asbestos-containing materials at the Weston Readiness Center.

AECOM observed peeling lead-based paint at the Weston Readiness Center. The peeling paint was limited to the female restroom/shower/locker room area, men's restroom, and the adjoining corridor. The sample was found to contain <0.0074% lead, which is below the reporting level.

AECOM observed evidence of water intrusion at the Weston Readiness Center. The water intrusion/mold growth was limited to the female locker room, female restroom/shower, men's restroom, and adjoining corridor.

Lighting levels measured throughout the facility were generally adequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005 with the exception of the Day Room, Orderly Room, and Break Room..

Six of the nine wipe samples collected in association with most administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the CO Office - desk top, former Firing Range - table, and former Firing Range - floor indicated levels of lead in excess of 200 ug/ft^2.

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

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

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

recommendations expressed in this report are based only on conditions that were observed during AECOM's inspection of the site.

Appendix A

Weston Readiness Center Facility Layout

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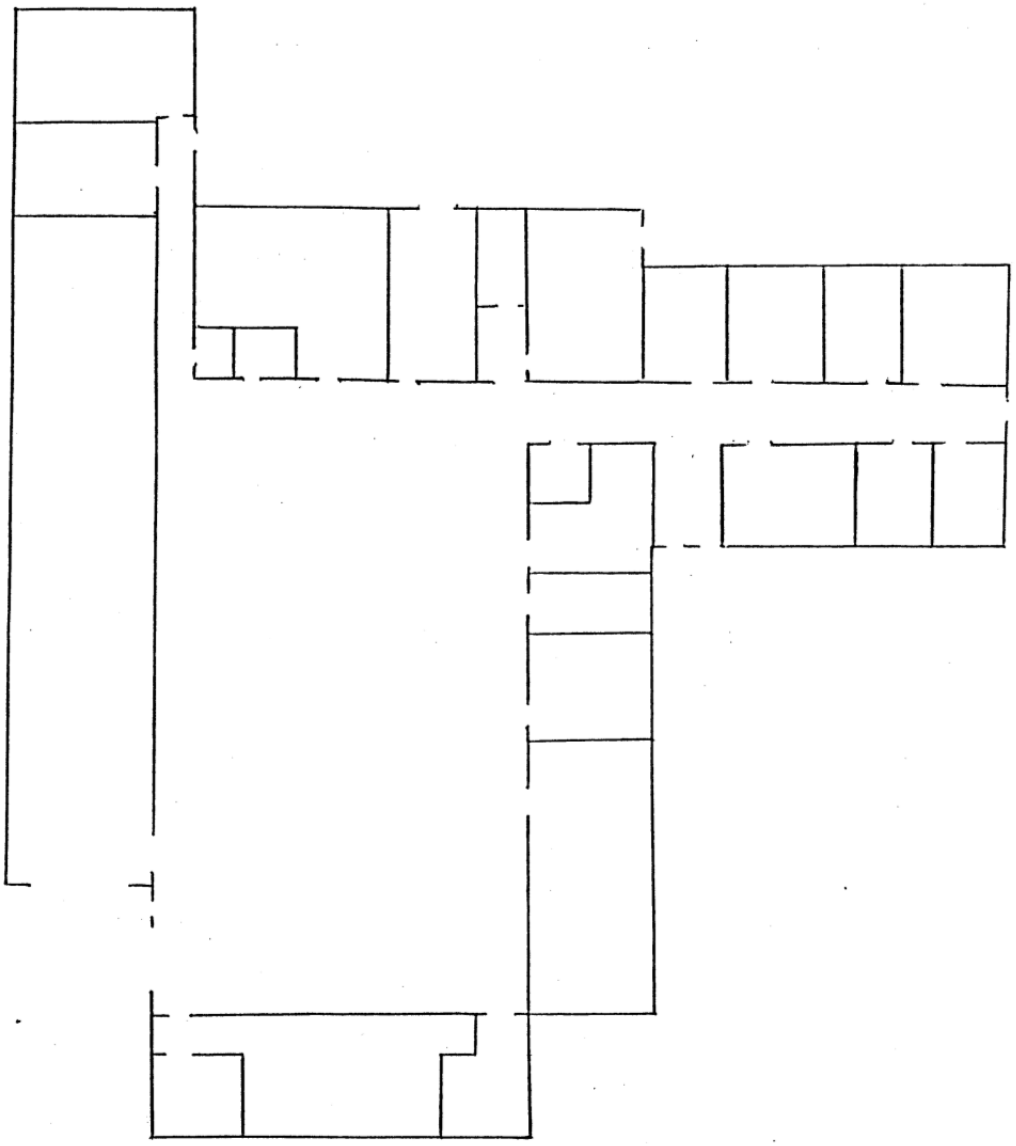
FIRE ESCAPE PLAN



Appendix B

Weston Readiness Center Photographs

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Photograph 1

View of Building Exterior

Photograph 2

View of Administrative Corridor

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Photograph 3

View of Classroom

Photograph 4

View of Computer Training Classroom

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Photograph 5

View of Break Room

Photograph 6

View of orderly Office Area

AECOM

Photograph 7

View of Kitchen

Photograph 8

View of Assembly Hall

AECOM

Photograph 9

View of Suspect Pipe Insulation in Assembly Hall

Photograph 10

View of Physical Fitness Area in Assembly Hall

AECOM

Photograph 11

View of HVAC System in Assembly Hall

Photograph 12

View of Former Gun Range

AECOM

Photograph 13

View of Suspect Pipe Insulation in Former Fire Range

Photograph 14

View of Former Bullet Trap

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Photograph 15

View of Flammable Storage Cabinet

Photograph 16

View of Personnel Corridor

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Photograph 17

View of Ceiling Debris on Men's Locker Room Floor

Photograph 18

View of Women's Restroom Ceiling Damage and Visible Mold

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Photograph 19

View of Water Damaged Ceiling

Photograph 20

View Ceiling Debris on Female Locker Room Floor

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Photograph 21

View of Damaged Paint on Female Locker Room Ceiling

Photograph 22

View of Ceiling Debris on Female Locker Room Floor

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Photograph 23

View of Mechanical Room

Photograph 24

View of Suspect Pipe Insulation in Mechanical Room

Appendix C

Analytical Results

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Weston RC	Chain Of Custody:	514268		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Weston, WV	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

Attention: Non-[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		Total ug	Final Result		Comments
13008394	Pb-001	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008395	Pb-002	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008396	Pb-003	Flame	Wipe	****	0.111	110	ug/ft²	17	160	ug/ft²	
13008397	Pb-004	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008398	Pb-005	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008399	Pb-006	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008400	Pb-007	Flame	Wipe	****	0.111	110	ug/ft²	48	430	ug/ft²	
13008401	Pb-008	Flame	Wipe	****	0.111	110	ug/ft²	33	300	ug/ft²	
13008402	Pb-009	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008403	WN-10	Flame	Paint Chip	****	N/A	0.0074	%Pb		<0.0074	%Pb	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Weston RC	Chain Of Custody:	514268		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	Weston, WV	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

Attention: Non-[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	Total ug	Final Result	Comments

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Analyst: Non-Responsive [redacted]

Technical Manager: Non-Responsive [redacted]

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514268

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

Submittal Information:
1. Job Name: WESTON RC
2. Job Location: WESTON, WV
3. Job #: PO #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone #
5. Submitted by: AECOM (Signature): Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive aecom.com
Comments:	☐ 2 Day (Date Due): 12/8/12	☐ Fax: Non-Responsive s.army.mil
		☐ Verbal: 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) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

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

Metals Analysis
☐ Pb Paint Chip (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)

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER/ OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 12/3/12 @ Via: FedEx By (Print) Sign:
2. Date/Time Analyzed: / / @ By (Print) Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/16/12
Job Number: 60275401
Contact Pers: Non-Responsi

Job Name: Weston RC
Job Location: West Virginia
Address: 40 Armory Rd
WESTON, WV

Company: AECOM
Phone Number: 315-432-[redacted]
Collected By: Non-Responsive
COC Number: —

Page 1 of 1

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Stage	16 in^2	Ghost Wipe
Pb-002	Kitchen	Dusty Surface	↓	↓
Pb-003	CO OFFICE	DESK		
Pb-004	↓ ↓	CABINET		
Pb-005	Corridor	FLOOR		
Pb-006	Formen RANGE	BULLET TRAP		
Pb-007	↓ ↓	TABLE		
Pb-008	↓ ↓	FLOOR		
Pb-009	Outside RANGE	FLOOR	↓	↓
WW-10	—	PAINT CHIP	—	—

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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

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Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Wheeling Readiness Center – Wheeling, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

National Guard Armory
Wheeling Readiness Center – Wheeling, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

05 June 2004

Prepared by: Non-Responsive
Industrial Hygienist

Reviewed by: Non-Responsive
Business Line Manager

Table of Contents

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Wheeling Readiness Center in Wheeling, West Virginia Non-Responsiv Non-Respons performed the evaluation on 31 October 2003. The point of contact at the readiness center was CW4 Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality

- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Converted Indoor Firing Range
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Water damage was observed at the armory. The source of the water damage was likely from moisture in the concrete blocks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the mold growth that may lead to indoor air quality problems.
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in a few of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Wheeling Readiness Center in Wheeling, West Virginia. Non-Responsiv Non-Responsi performed the evaluation on 31 October 2003. The point of contact at the readiness center was CW4 Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any results from the drill/assembly hall that were above the recommended limit, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary. Since there were no results above the recommended limit, the other samples were not submitted for analysis.

However, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on one (1) full-time building occupant. In addition, a general sample was taken in the office of CW4 Robert E. McCanich. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was observed at the armory in the drill hall; however, the building was built in 1995, therefore, bulk samples for lead in paint were not taken since lead based paint was not allowed to be used in the building.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were not observed.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. The inspection revealed water damage and possible mold on the walls of the drill hall.

The source of the water damage was likely from moisture in the concrete blocks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the mold growth that may lead to indoor air quality problems.

The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause

of the mold should be determined and actions taken to eliminate it. In addition, the cause of the mold should be determined and actions taken to eliminate it.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interviews with employees and measurements for carbon dioxide, humidity and temperature revealed no indoor air quality concerns. The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in few areas, including the classroom, locker room, and supply room (storage area).

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was an active indoor firing range at the facility; therefore, wipe samples were not collected.

2.9. HVAC System

The maintenance schedule for the HVAC system was evaluated to verify that maintenance occurs on a regular basis. Also, the condition of the HVAC system was evaluated to determine if the maintenance performed is effective. It was deemed that maintenance occurs on a regular basis, and the maintenance performed is effective.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, suspected asbestos-containing material, housekeeping, ergonomic concerns, indoor air quality, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, HVAC systems, and surface lead contamination in the converted firing range.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, water damage, visible mold, and lighting. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Wheeling, West Virginia
Date of Sampling: 31 October 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVWHE304-7	Assembly room – table top (adjacent to storage room) (See Building Layout Appendix B)	18
WVWHE304-8	Assembly room – vending machine top surface (See Building Layout Appendix B)	120
WVWHE304-9	Assembly room – supply room #135 serving counter top surface (See Building Layout - Appendix B)	< 5.4
WVWHE304-10	Assembly room – electrical box top surface (See Building Layout - Appendix B)	6.5
WVWHE304-11	Assembly room - coat rack top surface (See Building Layout - Appendix B)	12
WVWHE304-12	Field Blank	< 0.6 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 $\mu g/ft^2$.

Table 2
Breathing Zone/General Air Samples for Lead
National Guard Armory
Wheeling West Virginia
Date of Sampling: 31 October 2003

Sample Number	Employee/ General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVMOR304-A1	Non-Responsive	1253-1510/137	2.4925	341.47	<0.003
WVMOR304-A2	[redacted]ice #113	1255-1514/139	2.5494	354.36	<0.003
WVMOR304-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Wheeling, West Virginia
Date of Sampling: 31 October 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Kitchen	1	492	48.0	71.8
Outdoors	-	475	51.0	75.6

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Wheeling, West Virginia

Date of Sampling: 31 October 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Office #103	67.3-80.3	70	Some areas
Administrative Office #111	63.4-80.1	70	Some areas
Office #113	41.3-205.1	70	Some areas
Office #115	57.6-74.3	70	Some areas
TI office #125-1	69.3-87.9	70	Some areas
Classroom	24.5-48.3	70	No
Kitchen	23.5-89.6	70	Some areas
Locker Room	7.6-30.1	40	No
Female Public Rest Room	3.96-115.6	40	Some areas
Supply room (storage area)	15.6-29.3	30	No
Hallway to Dining Room	3.84-15.78	7.5	Some areas

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	West Virginia ARNG	Wheeling

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
31 October 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	Non-Responsive LW4

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 277 4001	C Comp 1st Bn the 137th Aviation	5 4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	4	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video display terminal	3-low	D uncontrolled Physical
7439-92-1	Lead, Inorganic dusts & fumes as Pb	3-low	C uncontrolled Respiratory

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive		E	M	[illegible]	MIL
		M	↓	↓	↓
		E	F		
		P	M		↓
		T	↓	↓	CIV

SECTION 6. COMMENTS

No comments ☐ See attached sheet ☒

survey conducted by Non-Responsive Building contains 3 Military Activities 1 Military part-time employee and 1 civilian caretaker. Military staff per formula mainly administrative functions.

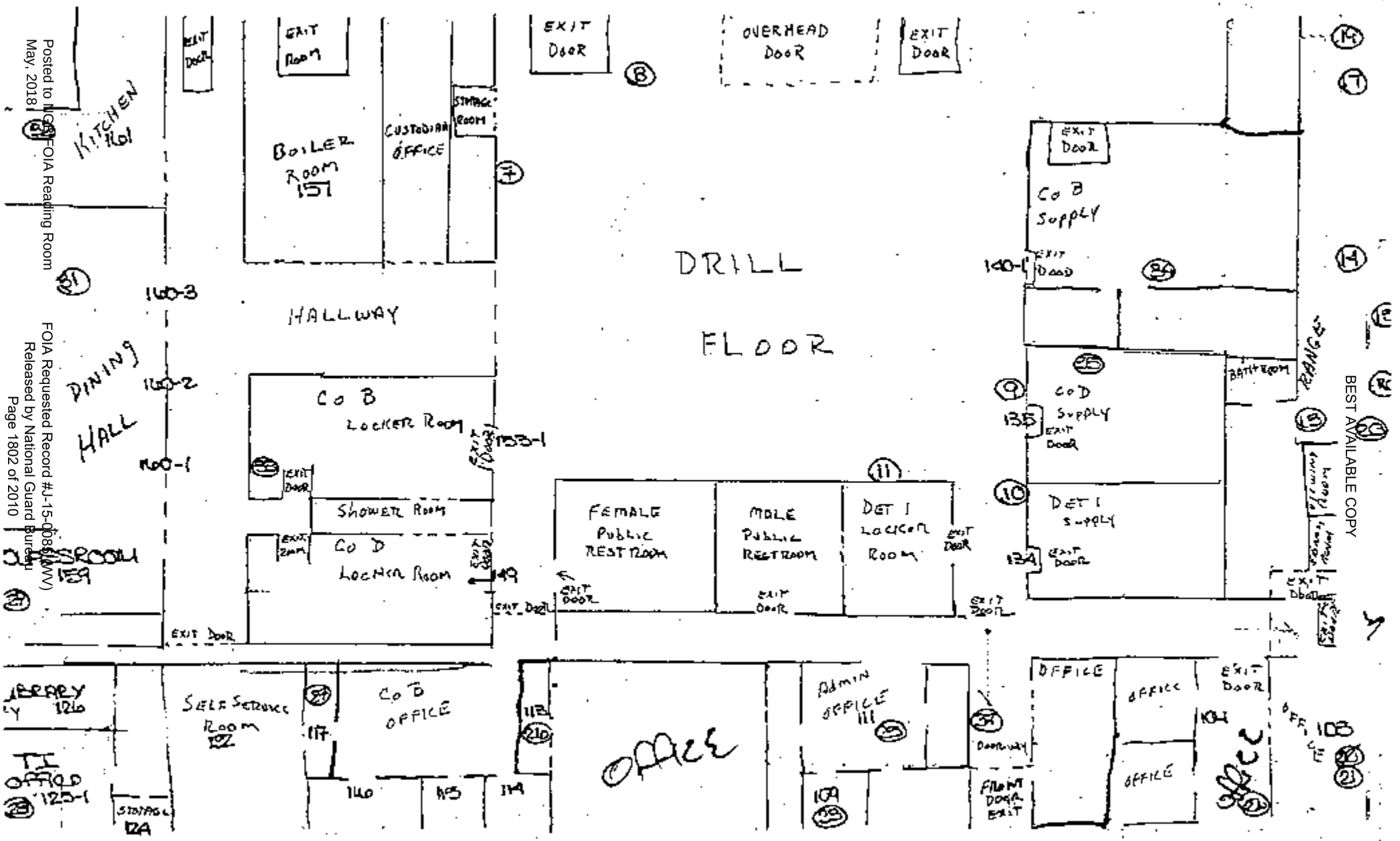
PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

* part-time

Appendix B
Building Layout



WHEELING WV

Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Wheeling	**Chain Of Custody:**	119265
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	1103	**Report Date:**	19-Nov-03
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
0408603	WVWHE304-7	Furnace	Wipe	****	0.111	5.40	ug/ft²	18	ug/ft²	
0408604	WVWHE304-8	Furnace	Wipe	****	0.111	67.51	ug/ft²	120	ug/ft²	
0408605	WVWHE304-9	Furnace	Wipe	****	0.111	5.40	ug/ft²	< 5.4	ug/ft²	
0408606	WVWHE304-10	Furnace	Wipe	****	0.111	5.40	ug/ft²	6.5	ug/ft²	
0408607	WVWHE304-11	Furnace	Wipe	****	0.111	5.40	ug/ft²	12	ug/ft²	
0408608	WVWHE304-12	Furnace	Wipe Blank	****	N/A	0.60	ug	< 0.6	ug	

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

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

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

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

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

Analyst: [redacted] Technical 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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Wheeling
Date: 11/4/2003

Sample 1

Sample Number: WVWHE304-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.499	2.463
	2.516	2.468
	2.531	2.461
	2.539	2.463
Average	**2.521**	**2.464**

Average Pre and Post **2.4925**

Time 1	12:53
Time 2	15:10
Total Time Sampled	**2:17**
Minutes Sampled	137.00

Volume **341.47 Liters**

Sample 2

Sample Number: WVWHE304-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2.558	2.517
	2.583	2.529
	2.573	2.545
	2.554	2.536
Average	**2.567**	**2.532**

Average Pre and Post **2.5494**

Time 1	12:55
Time 2	15:14
Total Time Sampled	**2:19**
Minutes Sampled	139.00

Volume **354.36 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Wheeling
Date:

Sample 1
Sample Number: WVWHE304-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2499	2463
	2516	2468
Average	2513.31	2461
	2539	2463
Average Pre and Post	2521	2464

Time 1 1253
Time 2 1510
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2
Sample Number: WVWHE304-A2
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2558	2517
	2583	2529
Average	2573	2545
	2554	2536
Average Pre and Post	2567	2532

Time 1 1255
Time 2 17514
Total Time Sampled
Minutes Sampled

Volume **Liters**

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers. Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f) 07 July 2004

MEMORANDUM FOR WVARNG, Wheeling Readiness Center, ATTN; CW4 Non-Responsi
Non- RR5, Box 14, Ohio City Airport, Wheeling, WV 26003

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive
Regional Industrial Hygienist

Encl

CF: OHM, MA Non-Responsive

National Guard Armory
Wheeling Readiness Center, Wheeling, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Water damage was observed at the armory. The source of the water damage was likely from moisture in the concrete blocks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the mold growth that may lead to indoor air quality problems. **RAC - 5**
- Visual mold was observed in the armory. The area where the mold is located should be thoroughly cleaned with 0.5% sodium hypochlorite solution (1 part household bleach to nine parts water) or equivalent in order to eliminate the potential mold/indoor air quality problem. In addition, the cause of the mold should be determined and actions taken to eliminate it. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in a few of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**

MEDICAL RECORD – SUPPLEMENTAL MEDICAL DATA

For use of this form, see AR 40-66; the proponent agency is the Office of The Surgeon General.

REPORT TITLE

WORKERS' OCCUPATIONAL WORKSITE SAMPLING DATA RECORD

OTSG APPROVED (Date)

DIRECTORATE Wheeling Armory **BLDG/ROOM** Wheeling
SPECIAL STUDY/REPORT NUMBER West Virginia National Guard Study
JOB DESCRIPTION/SERIES Military/Administrative Operations
SAMPLING DATE October 31, 2003

EXPOSURE MONITORED	TYPE SAMPLE*	PERMISSIBLE EXPOSURE LIMIT	SAMPLING RESULT	CALCULATED TWA	EXPOSURE CATEGORY**
1. Lead	P	0.05 mg/m^3	<0.003	<0.003	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*TYPE OF SAMPLE: G=General Area Sample
P=Personal Sample Collected in the Breathing Zone of the Worker.
R=Personal Sample Collected on another worker, but representative of expected exposure for this worker.

**EXPOSURE CATEGORY
1. Measured Exposure levels are below permissible exposure limit.
2. Measured Exposure levels are close to permissible exposure limits: See Comments.
3. Measured Exposure levels are above permissible exposure limits: See Comments.

COMMENTS:

NOTE: REFER TO THE SPECIAL STUDY OR REPORT REFERENCED FOR DETAILS OF SAMPLING AND RESULTS.

(Continue on reverse)

PREPARED BY (Signature & Title)	DEPARTMENT/SERVICE/CLINIC	DATE
Non-Responsive ndustrial Hygienist	INDUSTRIAL HYGIENE SECTION	1/27/2003

PATIENT'S IDENTIFICATION (*For typed or written entries give: Name --last, first, Middle; grade; date; hospital or medical facility*)

NAME: Non-Responsive SSG: 10/31/2003		HISTORY/PHYSICAL		FLOW CHART
SSN: Unavailable		OTHER EXAMINATION OR EVALUATION		OTHER (SPECIFY)
UNIT PHONE NO: 304-277-4001		DIAGNOSTIC STUDIES		TREATMENT

DA FORM 4700
1 MAY 78

HSXR-APG-Z OP 32 1 Jan 90

Industrial Hygiene Evaluation

Army National Guard (ARNG)
Armory
Wheeling, WV

Prepared For:	**NGB – Region North IH Office**
Survey Location:	**Armory** **RR 5, Box 14** **Wheeling, WV 26003 - 9202**
Prepared By:	**Analytical Laboratory Services, Inc. (ALSI)**
Survey Date:	**February 14, 2006**
Report Date:	**March 15, 2006**
ALSI Project #:	**0603110**

Non-Responsive
Director, Environmental Health & Safety

Table of Contents

Section 1.0 Executive Summary

The following are the major findings and recommendations obtained during an industrial hygiene survey conducted at the Armory located at RR 5, Box 14, Wheeling, WV 26003-9202 by Analytical Laboratory Services, Inc. (ALSI) Industrial Hygienist Mr. [redacted]. The survey was performed on February 14, 2006. The following are the major findings and recommendations obtained from the survey.

Findings	Recommendations	RAC
Noise Dosimetry		
A sound level meter survey was performed inside the Armory and all sound levels monitored were below 85 dBA.	No further action required.	3
Lighting		
Lighting was adequate in all areas of the Armory tested.	No further action required.	4
Housekeeping		
Housekeeping conditions were adequate.	No further action required.	4

Section 2.0 Introduction

On February 14, 2006, Analytical Laboratory Services, Inc. (ALSI) conducted an industrial hygiene survey, including sound level monitoring and lighting measurements at the Armory located at RR 5, Box 14, Wheeling, WV 26003 - 9202. Monitoring was performed at the request of Ms. Non-Responsive, CIH, and was performed in accordance with the Statement of Work for Industrial Hygiene Services provided by National Guard Bureau Industrial Hygiene Region North office. ALSI Industrial Hygienist Mr. Non- performed the on-site survey work. The primary objective was the determination of potential partial and full-shift employee exposures to chemical and/or physical hazards as well as an evaluation of training programs, work practices and overall safety of the shop.

The Armory provides administrative support for military purposes, storage space for arms and military equipment and serves as a general meeting building for military personnel. There are a total of 4 employees who may potentially be working at the Wheeling (WV) Armory. On the date of survey, 4 workers were present and none were sampled for noise or chemicals. The following is a facility/activity summary:

Parameters	Armory
Area of facility	24, 300 sq. ft.
Number of maintenance bays	0
Total number of personnel	4
Number of administrative personnel present	4
Number of maintenance personnel present	0
Work schedule	700 -1530
Battery charging room	No
Brake replacement	No
Soldering	No
Abrasive blasting	No
Spray paint booth	No
Sheet metal work	No
Welding	No
Solvent parts washer	No
Detergent (soap) parts washer	No
Local exhaust ducts for vehicles	No
Flammable storage cabinets	No
MSDS & Chemical Inventory list	Yes
Emergency eye-wash & shower	No
Fixed carbon monoxide meter	No
Powered Industrial Trucks	No
Lighting	Fluorescent
Posted for Hazards and PPE	Yes
Hearing Protection (HP) worn	No
First Aid Station	Yes - 1
Fire Extinguishers	Yes -12
Grinders	No
Presses	No

Section 3.0 Sampling Strategy

The monitoring strategy for this survey included the following:

1. General area sound level monitoring was performed at various locations inside the Armory.

2. General area lighting monitoring was performed at various locations inside the Armory.

Sampling was conducted on 1st shift. Conditions and exposures are believed to be representative of the highest exposure conditions for that day.

Section 4.0 Monitoring Methods

Sound Level Meter Survey

A sound level meter survey was performed inside the Wheeling (WV) Armory using a Larson Davis Sound Track LXT octave band analyzer (OBA). The OBA was set to measure noise exposure using DA sampling criteria. DA sampling criteria are more stringent than the OSHA standard for noise. It has been proven to be more effective in protecting worker hearing. The next calibration due date for the OBA is July 2006. The octave band analyzer for this survey was set to the following parameters:

Filter	Response Rate	Exchange Rate	Threshold	Dose Criterion	Upper Limit
A Weighting	Slow	3	80	85	130

Light Measurements

Light measurements were taken with a properly calibrated Cooke Cal Light Meter Model 400 Serial # K98364. The next calibration due date for the Cal Light Meter is 12/19/06.

Section 5.0 Industrial Hygiene Measurements

Table 5.1 Sound Level Meter Survey Results – Armory Wheeling, WV Date: 2/14/06		
Location	**Sound Level (dBA)**	**DA Requirement For Inclusion in Hearing Program 8-hour TWA (dBA)**
Drill Hall	65 - 70	85
Main Lobby	50 - 65	85
Dining Hall	55 - 65	85
Classroom Hallway	50 - 65	85

Table 5.2 Lighting Survey Results - Armory, Wheeling, WV Date: 2/14/06				
Location	**Light Source**	**Measurement in Foot Candles**	**Recommended**	**Adequate ?**
Drill Hall	Fluorescent	70	20	Yes
Main Lobby	Fluorescent	52	20	Yes
Dining Hall	Fluorescent	60	50	Yes
Classroom Hallway	Fluorescent	55	20	Yes

Table 5.4 Note:

1. Lighting levels are compared to the levels given in ANSI/IES-RP-7-2001, American National Standard Practice for Industrial Lighting and standard used by the ARNG.

Section 6.0 Findings and Discussion

Occupational health risks at the Armory in Wheeling WV are, for the most part, minimal or well controlled. The following findings and discussion are based on sampling results and observations from the day of the survey.

1. Sound Level Meter Survey (See Table 5.1):
   Sound level meter readings taken throughout the interior of the Wheeling (WV) Armory on the date of survey were below levels which would indicate a potential noise exposure concern.

2. Lighting Levels (Table 5.2): Lighting levels in the facility areas evaluated were at or above guidelines recommended in ANSI/IES-RP-7-2001, American National Standard Practice for Industrial Lighting. This is the standard used by the ARNG.

Section 7.0 Recommendations

Based on sampling results and conditions, as they existed during this survey, ALSI offers the following recommendations.

1. If operations change significantly from conditions of this survey, additional exposure monitoring should be performed on workers. RAC 3

   Citation source: Professional judgment, various Army and OSHA standards.

Appendix A. Abbreviations & Acronyms (Alphabetically Listed)

ACGIH = American Conference of Governmental Industrial Hygienists

Action Level = One half of the PEL or a value close to half specifically established for a substance by OSHA.

ARNG = Army National Guard

C= Ceiling value: the concentration that shall not be exceeded during any part of the working exposure.

DA = Department of the ARMY.

I = Inhalable fraction of the aerosol, (ACGIH).

OSHA = Occupational Safety and Health Administration

PEL = The Permissible Exposure Limit established by the Occupational Safety and Health Administration (OSHA). This is a government regulatory standard. Compliance with PEL's is mandatory. PEL's have been established based on 8-hour workdays and 40-hour workweeks.

STEL = Short Term Exposure Limit: the concentration that shall not be exceeded over and average of 15 minutes.

TLV-TWA = The Year 2006, Threshold Limit Value for Chemical Substances established by ACGIH. This is a health-based standard that is recommended but not required by law. The time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effect.

TWA = Time Weighted Average

Appendix B. Noise Compliance Checklist

Noise Compliance

The following is a checklist that **summarizes** parts of the DA Pamphlet 40-501, Hearing Conservation Program. It was created to help assist in implementing a hearing conservation program, assess compliance with DA requirements, and determine program effectiveness. DA requires the installation commander to administer an effective hearing conservation program to include:

1. Noise hazard identification;
2. Engineering controls;
3. Hearing protectors;
4. Monitoring audiometry;
5. Health education;
6. Enforcement;
7. Program evaluation.

This checklist provides an overview of the DA standard for occupational noise exposures. See the entire standard for complete information.

Noise Hazard Identification (Chapter 4)

- Noise survey to include determining TWA shall be performed in all noise hazardous areas, vehicles, and equipment at least once and within 30 days of change in operation.
- A Type 2 sound level meter (ANSI approved) shall be used.
- TWA shall be determined using a noise dosimeter measuring:
    1. Slow response;
    2. Integrating sound levels from 80-130dB;
    3. 3-dB time-intensity exchange rate;
- Equipment utilized shall be properly calibrated.

Engineering Controls (Chapter 5)

- Engineering controls are most preferred method for controlling noise exposure if implementation is feasible and if technologically and operationally practical and cost effective.
- When possible, utilize engineering controls to reduce steady state noise levels below 85 dBA and impulse noise levels below 140 dBP.

Hearing Protectors (Chapter 6)

- Proper hearing protection is required for all personnel working in, or visiting, noise hazardous areas.
- Hearing protection is required in areas where steady-state noise equals or exceeds 85 dBA or 140 dBP, regardless of duration.
- Double hearing protection required when steady state noise exceeds 103 dBA TWA. Greater than 108 dBA TWA, exposure is not permitted.

Monitoring Audiometry (Chapter 7)

- Reference and termination audiograms required for all soldiers and for civilian personnel in noise hazardous areas.
- Personnel shall be enrolled in a comprehensive hearing conservation program when they are exposed to:
    - Steady-state noise with a TWA of 85dBA or greater.
    - Impulse noise of 140 dBP or greater.
    - Airborne high-frequency of ultrasonic noise.
    - Known or suspected ototoxins.

Health Education (Chapter 8)

- Training on noise hazards, controls, PPE, etc. required for all noise-exposed personnel.

Enforcement (Chapter 9)

- Command emphasis shall be placed on all elements of the HCP.
- 1st line supervisors shall enforce hearing protection requirements.

Program Evaluation (Chapter 10)

- Each installation's HCP shall be evaluated internally and externally to assess the program effectiveness.

Appendix C. Definitions Related to Sound

Definitions Related to Sound

Action Level – The sound level which when reached or exceeded necessitates implementation of activities to reduce the risk of noise induced hearing loss. OSHA currently uses an 8-hour time weighted average of 85 dBA as the criterion for an effective hearing conservation program.

Attenuation (Real-World) – Estimated sound protection provided by hearing protective devices as worn in "real-world" environments.

dB (Decibel) – The unit used to express the intensity of sound. The decibel scale is a logarithmic scale in which 0 dB approximates the threshold of hearing in the mid frequencies for young adults and in which the threshold of discomfort is between 85 and 95 dB SPL and the threshold of pain is between 120 and 140 dB SPL.

Criterion Level – is the maximum allowable exposure to accumulated noise; it gives the conditions that result in 100% dose. The criterion level is typically set by DA or a regulatory agency such as OSHA and is usually not applicable for community noise monitoring.

Dose - The noise exposure expressed as a percentage of the maximum allowable daily exposure to accumulated noise (related to the criterion level). For DA, a 100% dose would equal an 8-hour TWA of 85 dBA.

Dosimeter – When applied to noise, refers to an instrument that measures sound levels over a specified time interval, stores the measures, and calculates the sound as a function of sound level and sound duration and describes the results in terms of, dose, time-weighted average, and perhaps other parameters.

Exchange Rate (doubling rate) – The relationship between intensity and dose. DA uses a 3-dB exchange rate. Thus, if the intensity of an exposure increases by 3-dB, the dose would double.

Impulse Noise – Used to generally characterize unweighted impact or impulse noise that is typified by a sound which rapidly rises to a sharp peak and then quickly fades. The sound may or may not have a "ringing" quality (such as striking a hammer on a metal plate or a gunshot in a reverberant room). Impulsive noise may be repetitive, or may be a single event (as with a sonic boom). Note: if the impulses occur in very rapid succession (such as with some jackhammers), the noise would not be described as impulsive.

Max Level (Lmax) – is the highest sampled A-weighted sound level during the instrument's run time allowing for the RESPONSE that the unit is set for (fast or slow).

Noise – Any unwanted sound.

Noise Induced Hearing Loss – A sensorineural hearing loss that is attributed to noise and for which no other etiology can be determined.

NRR (Noise Reduction Rating) – The NRR is a single-number rating method, which attempts to describe a hearing protector based on how much the overall noise level is reduced by the hearing protector.

Peak Level (Noise) – is the highest instantaneous sound level that the microphone detects. Unlike the MAX LEVEL, the peak is detected independently of the slow or fast RESPONSE that the unit is set for.

Permissible Exposure Limit (PEL Noise) – The Occupational Safety and Health Administration (OSHA) permissible exposure limits; presently 90 dBA. A time-weighted average exposure that must not be exceeded during any 8-hour work shift of a 40-hour workweek.

Presbycusis – The gradual increase in hearing loss that is attributable to the effects of aging, and not related to medical causes or noise exposure.

Response (fast or slow) – a setting (on the dosimeter) that determines how quickly the unit responds to fluctuating noise. Fast has a time constant of 125 milliseconds. Slow has a time constant of 1 second.

Sound Pressure Level (SPL) – A measure of the ratio of the pressure of a sound wave relative to a reference sound pressure. Sound pressure level in decibels is typically referenced to 20μPa. When used alone, (e.g., 90 dB SPL) a given decibel level implies an unweighted sound pressure level.

Threshold Limit Value (TLV) – A guideline provided by the American Conference of Governmental Industrial Hygienists to denote the exposure which, when reached or exceeded, may be hazardous. For noise the TLV is 85 dBA and the exchange rate is 3 dB.

Time Weighted Average (TWA Noise)– The Time Weighted Average Sound Level, expressed in dBA, which is computed so that the resulting average would be equivalent to an exposure resulting from a constant noise level over an 8-hour period.

Weighted Measurements – Weighting (A, B, C, and Linear) are commonly applied to measures of sound levels to account for the way the ear perceives the "loudness" of sounds.

1. **A-Weighting:** is the most commonly used filter in both industry noise applications (OSHA) and community noise regulations. "A" weighted measurement is often reported as dBA. The "A" weighted filter attempts to make the dosimeter respond closer to the way the human ear hears. It has the added advantage of being correlated with annoyance measures and is most responsive to the mid frequencies, 500 to 4000 Hz.
2. **B-Weighting:** is similar to "A" weighting but with less attenuation. The "B" weighting is very seldom, if ever, used.
3. **C-Weighting:** provides a fairly flat frequency response with only slight attenuation of the very high and very low frequencies. "C" weighting is intended to represent how the ear perceives sound at high decibel levels and is often used as a "flat" response when linear is not available. "C" weighted measurements are often reported as dBC.

Appendix D. References

1. ACGIH. Threshold Limit Values for Chemical and Physical Agents, American Conference of Governmental Industrial Hygienists, Cincinnati, OH, 2006.

2. ACGIH. Industrial Ventilation A Manual of Recommended Practice, 25th., American Conference of Governmental Industrial Hygienists, Cincinnati, OH, 2004.

3. OSHA. Z Tables, Limits for Air Contaminants (General Industry). Code of Federal Regulations, Title 29, Chapter XVII, Part 1910, Section 1000.

4. OSHA. Respiratory Protection (General Industry). Code of Federal Regulations, Title 29, Chapter XVII, Part 1910, Section 134.

5. OSHA. General Requirements (General Industry). Code of Federal Regulations, Title 29, Chapter XVII, Part 1910, Section 252.

6. AIHA. Noise & Hearing Conservation Manual, American Industrial Hygiene Association, Akron, OH, 1991.

7. NIOSH. Preventing Occupational Hearing Loss - A Practical Guide, National Institute for Occupational Safety and Health, Cincinnati, OH, 1996.

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Appendix E. Photographs of Facility and Operations

Appendix F. Shop Layout and Evacuation Plan

Appendix G. Vehicle and Equipment Hazardous Materials List

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




Industrial Hygiene Survey
for WVARNG – Wheeling Readiness Center
538 Girty's Point Road
Wheeling, West Virginia 26003

AECOM
December 2012
Document No.: 60275401/Wheeling Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Wheeling Readiness Center
538 Girty's Point Road
Wheeling, West Virginia 26003

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Non-Responsive
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Project Manager

Non-Responsive
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Northeast District Health & Safety Manager

AECOM Environment
December 2012
Document No.: 60275401/Wheeling Readiness Center

Contents

List of Appendices

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Executive Summary

On October 15, 2012, AECOM Technical Services Northeast, Inc. (AECOM) conducted an Industrial Hygiene (IH) survey of the Wheeling Readiness Center facility located at 538 Girty's Point Road in Wheeling, West Virginia. SSG Non-R[redacted] was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Wheeling Readiness Center operations.

The industrial hygiene survey was conducted in general accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Wheeling Readiness Center is currently staffed by five personnel. The facility is configured as an administrative area, firing range, and a drill/assembly hall.

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

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

The Wheeling Readiness Center is housed in a single story masonry building constructed in 1995.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

No damaged suspect asbestos containing materials were observed during the evaluation.

Peeling paint was observed in the drill hall and a sample was collected. Detectable levels of lead were not present in the sample.

Water stained ceiling tile was observed in the corridor. Previous roof leaks in the drill hall were reported by site personnel. The roof has been replaced, but the ceiling tiles had not been replaced at the time of the survey. Water intrusion is a mold growth risk factor.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a boiler room that feeds radiant heaters throughout the building as well as air handling units that provide fresh air to occupied spaces.

1.0 Facility Description and Operations

The Wheeling Readiness Center is located in a single story slab on grade building constructed in 1995. The drill hall is surrounded on the east, north and west sides by administrative areas, with a firing range located on the west side of the building. Most areas are finished block walls; acoustical drop ceilings, and floor tile.

The range was closed several years prior to the survey. However, no remedial activities have been undertaken since the range closure and a significant amount of dust and debris was observed in the range areas.

The primary activity at the Wheeling Readiness Center is routine administrative duties. The Wheeling Readiness Center is currently staffed by approximately 5 personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall, administrative areas, and in association with the range following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost Wipes. Very little dust was observed outside of the range.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
WH-01	Drill Hall Floor - North	<110 ug/ft^2
WH-02	Drill Hall Floor - North	<110 ug/ft^2
WH-03	Drill Hall – On top of stored box	<110 ug/ft^2
WH-04	Kitchen – Shelf	<110 ug/ft^2
WH-05	Co. B office – Supply Grille	<110 ug/ft^2
WH-06	Classroom Desk	<110 ug/ft^2
WH-07	Co. B office – Top of file cabinet	<110 ug/ft^2
WH-08	Main corridor floor	<110 ug/ft^2
WH-09	Classroom – Supply Grille	<110 ug/ft^2
WH-10	Range Exhaust	120 ug/ft^2
WH-11	Bullet Trap	14,000,000 ug/ft^2
WH-12	Range Light Fixture	1,600 ug/ft^2
WH-13	Range Overhead Heater	3,100 ug/ft^2
WH-14	Range Floor	43,000 ug/ft^2
WH-15	Outside Range on Floor	1,100 ug/ft^2

ug/ft^2 = Micrograms per square foot.

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

However, wipe samples collected in association with the firing range indicated levels of lead in excess of 200 ug/ft^2 per NG-PAM 420-15. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. AECOM observed peeling paint in the drill hall during this evaluation. A sample of the peeling paint was collected and submitted for analysis. The sample was not found to contain detectable levels of lead. Laboratory analytical results are presented in Appendix C.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos-containing materials (ACM) in readily accessible areas of the Wheeling Readiness Center during this survey.

Typical miscellaneous building materials observed throughout the building but not sampled include floor tiles and associated mastic, cove base and associated mastic, and ceiling tiles.

3.1.3 Water Damage/Mold

AECOM observed water stained ceiling tiles in the main corridor during this survey. Site personnel reported that there had been previous roof leaks, but that the roof has been replaced and the ceiling tiles have not. Water intrusion is a mold growth risk factor.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section contains general office space. The administration section is generally utilized by all of the Wheeling Readiness Center staff members. No Indoor Air Quality concerns were noted by the Wheeling Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. All readings were within acceptable guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Outside - Baseline	0.7	407	56.8	65.8
Classroom	0.4	692	71.0	57.0
Drill Hall	0.6	438	74.2	50.7
Company B Office	0.5	476	72.5	49.1

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

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

The only potential for contamination of clean air sources observed at the facility was the exhaust from the range. The range is no longer used.

AECOM did not observe any obvious indications of maintenance issues with the general ventilation system from readily accessible areas. Percentage of outside air supplied by the HVAC system was calculated using CO_2 levels, and was determined to be approximately 24%, using the ASHRAE formula $\%OA=((C_{RA}-C_{SA})/(C_{RA}-C_{OA}))X100$, where C_{RA}=535 ppm CO_2, C_{SA}=504 ppm CO_2, and C_{OA}=407 ppm CO_2. Based on the carbon dioxide levels observed inside the building during this assessment, there is appears to be a sufficient quantity of outside air being delivered via the HVAC system in order to satisfy the occupant load.

Very little dust was observed at diffusers, and site personnel indicated that the system seems to work well. Temperature readings were constant in all areas occupied by readiness center personnel.

4.1.2 HVAC Maintenance

Building maintenance personnel were unavailable at the time of the survey. As such, AECOM was unable to verify whether or not a maintenance schedule is in place. Based on the relatively clean condition of diffusers observed during the survey, it is presumed that maintenance occurs regularly.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in all areas.

Table 5-1: Light Survey

Location	Results (Foot candles)	Met Standard (Y/N)	Standard*
Classroom	73.2	Y	30
Corridor	53.7	Y	5
Boiler Room	45.7	Y	30
Drill Hall	32.7	Y	30
Locker Room	29.2	Y	7
Fitness Room	33.3	Y	30
Company B Office	68.8	Y	50
Administrative Office	91.7	Y	50
Men's Room	132.4	Y	5
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI/IESNA RP-7-01)			

6.0 Evaluation of Attached Garage

There is no garage associated with the Wheeling Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Wheeling Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

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Water stained ceiling tile was observed in the corridor. Previous roof leaks in the drill hall were reported by site personnel. The roof has been replaced, but the ceiling tiles had not been replaced at the time of the survey. Water intrusion is a mold growth risk factor.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of a boiler room that feeds radiant heaters throughout the building as well as air handling units that provide fresh air to occupied spaces.

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

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

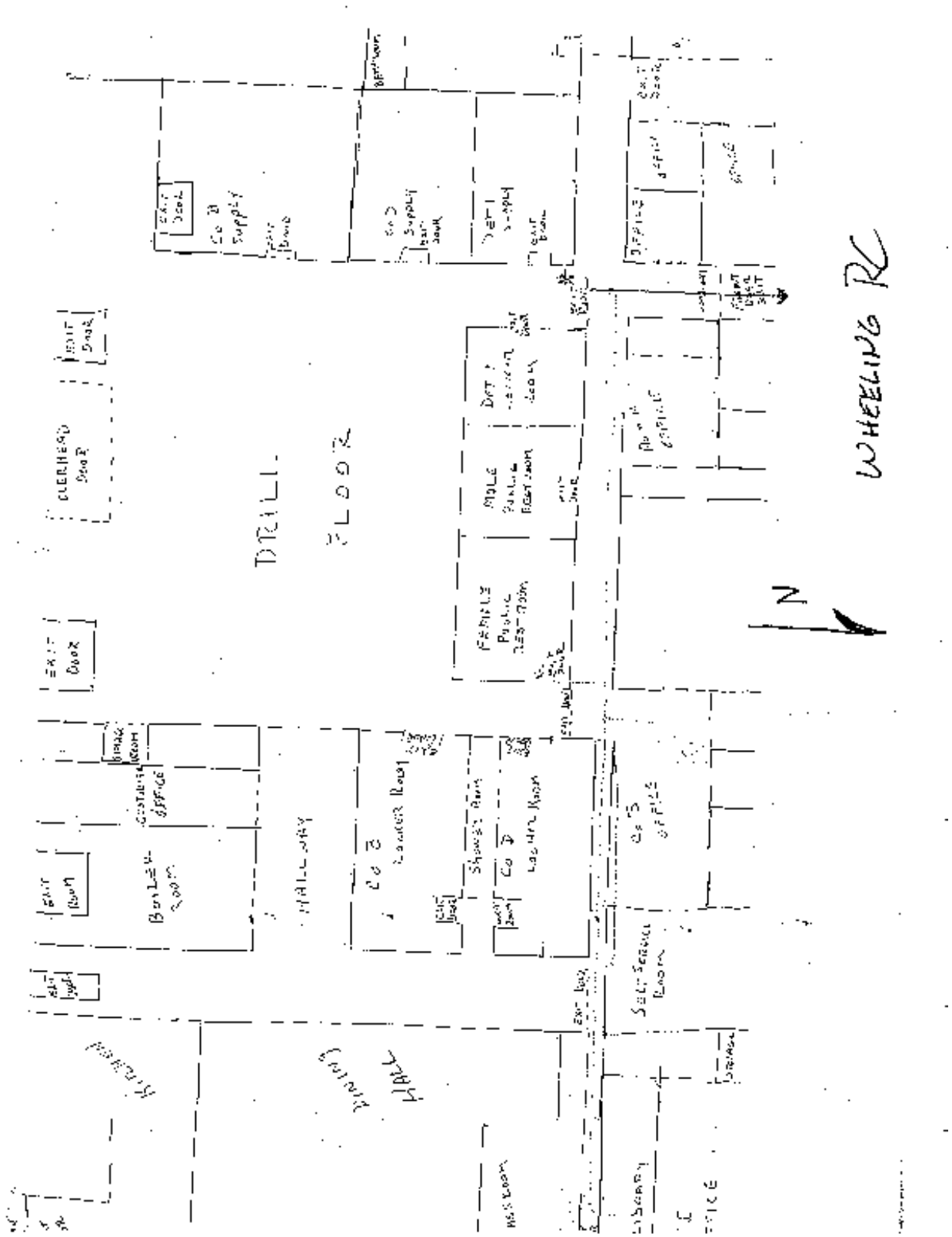
The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a

change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during AECOM's inspection of the site.

Appendix A

Wheeling Readiness Center Facility Layout

AECOM



Appendix B

Wheeling Readiness Center Photographs

AECOM

Photograph 1

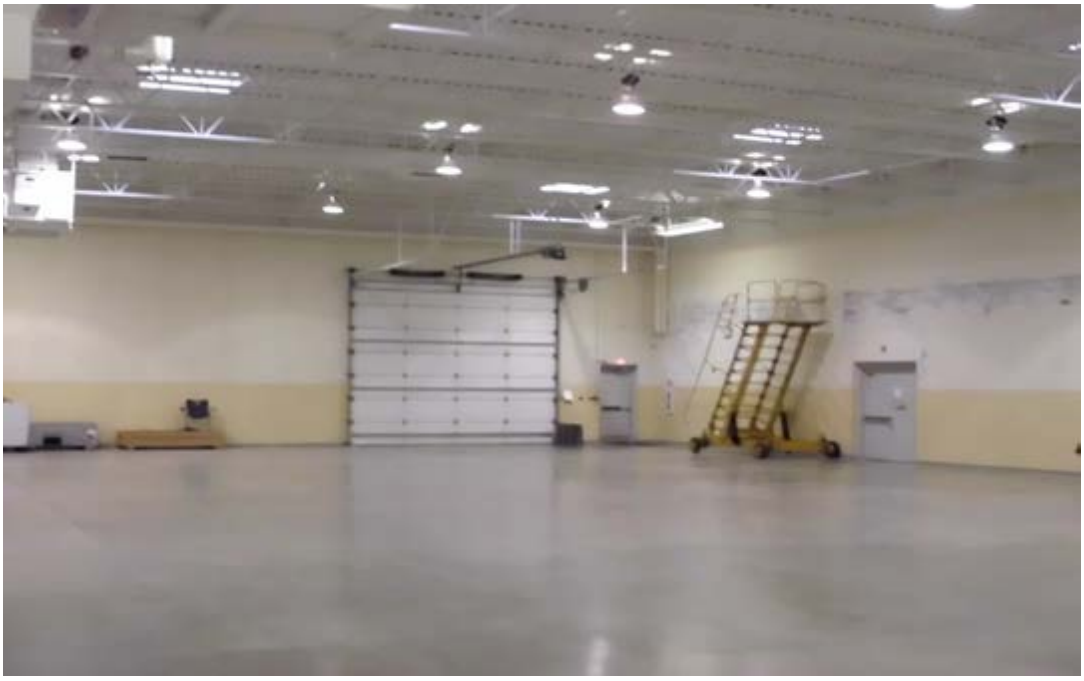
Building Exterior Front

Photograph 2

Boiler Room

AECOM

Photograph 3



Drill Hall

Photograph 4

Drill Hall #2

AECOM

Photograph 5

Range Exhaust

Photograph 6

Range From Firing Line

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Photograph 7

Typical Construction

Photograph 8

Water Damaged Ceiling Tile in corridor

Appendix C

Analytical Results

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Wheeling RC	Chain Of Custody:	514272		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

Attention: Non-R [redacted] l

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
13008440	WH-01	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008441	WH-02	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008442	WH-03	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008443	WH-04	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008444	WH-05	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008445	WH-06	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008446	WH-07	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008447	WH-08	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008448	WH-09	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008449	WH-10	Flame	Wipe	****	0.111	110	ug/ft²	100	920	ug/ft²	
13008450	WH-11	Flame	Wipe	****	0.111	110	ug/ft²	1600000	14000000	ug/ft²	
13008451	WH-12	Flame	Wipe	****	0.111	110	ug/ft²	180	1600	ug/ft²	
13008452	WH-13	Flame	Wipe	****	0.111	110	ug/ft²	350	3100	ug/ft²	
13008453	WH-14	Flame	Wipe	****	0.111	110	ug/ft²	4800	43000	ug/ft²	
13008454	WH-15	Flame	Wipe	****	0.111	110	ug/ft²	120	1100	ug/ft²	
13008455	WH-16	Flame	Paint Chip	****	N/A	0.01	%Pb		<0.01	%Pb	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

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CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
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www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	Job Name:	Wheeling RC	Chain Of Custody:	514272		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

Attention: Non-[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	Total ug	Final Result	Comments

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

An[redacted] Non-Responsive

Technical Manager[redacted] Non-Responsive

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AMA Analytical Services, Inc.
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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514272

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

Submittal Information:
1. Job Name: Wheeling RC
2. Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive
5. Submitted by: AECOM (Signature): Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email fax to contacts on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsiv aecom.com
Comments:	☐ 2 Day (Date Due:) 10/30/12 ☐ Results Required By Noon	☐ 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)
*It is recommended that blank samples be submitted with all air and surface samples

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

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

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☒ Pb Paint Chip 1 (QTY)
☒ *Pb Dust Wipe (wipe type: ghost wipe) 15 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

SAMPLE INFORMATION				ANALYSIS						MATRIX						CLIENT CONTACT
CLIENT ID #	SAMPLE LOCATION/ID	DATE/ TIME	VOL (L) Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/23/12 @ Via: FedEx By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/15/12
Job Number: 60275401.1
Contact Perso: Non-Respons

Job Name: Wheeling RC
Job Location: Wheeling RC
Address: Girtys Pt Rd
Wheeling, WV

Company: AECOM
Phone Number: 315 429 0474
Collected By: Non-R
COC Number: ~

Page 1 of 1

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
WH-01	Drill Hall North		16 in^2	Ghostwipe
WH-02	" " South		"	"
WH-03	" " Stored Box		"	"
WH-04	Kitchen		"	"
WH-05	Co. B office	Supply Air Grille	"	"
WH-06	Classroom	TABLE TOP	"	"
WH-07	Co. B OFFICE	TOP OF CABINET	"	"
WH-08	Corridor	Floor	"	"
WH-09	Classroom	Supply Air Vent	"	"
WH-10	RANGE	EXHAUST	"	"
WH-11	"	Bullet Trap	"	"
WH-12	"	Light Fixture	"	"
WH-13	"	Overhead Heater	"	"
WH-14	"	Floor	"	"
WH-15	Outside RANGE	Floor	"	"
WH-16	Drill Hall	Wall	-	Paint Chip

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-AVS-SI
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-AVS-SI (40-5f)

15 July 2004

MEMORANDUM FOR WVARNG, Williamson Readiness Center, Williamson, WV 25661

SUBJECT: Baseline Survey Report

1. I have enclosed the industrial hygiene survey report completed by Shaw Environmental, Inc.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is 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.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Encl

Non-Responsive

Regional Industrial Hygienist

CF: OHM, MAJ Non-Responsive

National Guard Armory
Gaujot Readiness Center – Williamson, West Virginia
Industrial Hygiene Evaluation

Recommendations

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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. **RAC - 4**
- Material suspected of containing asbestos was observed (pipe insulation). Asbestos containing material on a pipe in the boiler room was damaged, and sampling revealed that the insulation contained asbestos. The damaged asbestos containing material on the pipe in the boiler room should be repaired. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials. **RAC - 4**
- Water damage was observed at the armory. The source of the water damage was likely from pipe leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems. **RAC - 5**
- Measurements for humidity and temperature revealed that levels did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended levels of 30% and 68 degrees Fahrenheit (winter conditions) in the facility. It is recommended that a humidification system be installed to meet the recommended level. In addition, the heating units should be adjusted to increase the temperature. **RAC - 5**
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting. **RAC - 5**

- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. Access to the bullet trap should be limited, and employees should not be allowed to work in the bullet trap area without protective clothing until the area has been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible. **RAC - 4**

Shaw Environmental, Inc.

312 Directors Drive
Knoxville, TN 37923
865.690.3211
Fax 865.690.3626

Shaw™ Shaw Environmental, Inc.

National Guard Armory
Gaujot Readiness Center – Williamson, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

07 June 2004

National Guard Armory
Gaujot Readiness Center – Williamson, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

07 June 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

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Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Gaujot Readiness Center in Williamson, West Virginia. [redacted] performed the evaluation on 01 December 2003. The point of contact at the readiness center was caretaker [redacted] The military unit was deployed on the date of the survey; therefore no military personnel were present.

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation

- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Material suspected of containing asbestos was observed (pipe insulation). Asbestos containing material on a pipe in the boiler room was damaged, and sampling revealed that the insulation contained asbestos. The damaged asbestos containing material on the pipe in the boiler room should be repaired. In addition, an operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from pipe leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Measurements for humidity and temperature revealed that levels did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended levels of 30% and 68 degrees Fahrenheit (winter conditions) in the facility. It is recommended that a humidification system be installed to meet the recommended level. In addition, the heating units should be adjusted to increase the temperature.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in many of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.
- Wipe sampling for lead in the converted firing range revealed concentrations above the recommended level. These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. Access to

the bullet trap should be limited, and employees should not be allowed to work in the bullet trap area without protective clothing until the area has been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible.

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Gaujot Readiness Center in Williamson, West Virginia Non-Non-Respon performed the evaluation on 01 December 2003. The point of contact at the readiness center was caretaker Non- The military unit was deployed on the date of the survey; therefore no military personnel were present.

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any results above acceptable levels from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix E); therefore, no actions are necessary. Since results were below acceptable levels from the drill/assembly hall, the other samples were not submitted for analysis.

However, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

General air sampling was conducted in the facility at two locations (readiness NCO's office and Classroom #9). Pease note that the military unit was deployed on the date of the survey; therefore no military personnel were present to sample. The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the areas sampled; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing material was pipe insulation observed in the drill hall on approximately twenty-two pipe joints or elbows. It is assumed that suspected asbestos containing insulation is in the pipe joints/elbows throughout the facility. Due to the presence of drop-down ceiling, an exact measurement was not feasible. The condition of the pipe insulation materials on the pipe elbows/joints was considered good (no rips, tears, or other damage). Pipe insulation was also observed in the boiler room on a pipe (approximately 34 linear feet). The condition of this material was considered poor; therefore a bulk sample was collected. The results revealed asbestos in the form of chrysotile at 3-5 % and amosite at 10-20% (total asbestos 13-25%) in the gray powdery/fibrous material.

An operation and maintenance plan should be followed when performing any activities that may disturb the asbestos-containing materials or suspected asbestos-

containing materials. In addition, the damaged asbestos containing material on the pipe in the boiler room should be repaired.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. No mold was observed, however, the inspection revealed water damage on the pipes in the boiler room.

The source of the water damage was likely pipe leaks. The sources of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

2.3.2 Indoor Air Quality

Interviews with the caretaker and measurements for carbon dioxide revealed no indoor air quality concerns at the armory. However, measurements for humidity and temperature revealed that levels did not meet the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of 30% and 68 degrees Fahrenheit (winter conditions) in the facility. It is recommended that a humidification system be adjusted to meet the recommended level. In addition, the heating units should be adjusted to increase the temperature.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements. Note that the maintenance bay is only used on drill weekends for minor repair activities (oil changes, etc.); therefore, the hearing conservation, respiratory protection, and PPE programs are not applicable.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did

not meet the minimum requirements in most of the locations measured, including the commander's office, women's latrine, enlisted men's latrine, and classrooms.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The space was converted into a maintenance bay, used primarily on drill weekends. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 5.2 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 21 $\mu g/ft^2$;
- stored item (filing cabinet top surface) at 98 $\mu g/ft^2$;
- light fixture at 620 $\mu g/ft^2$; and
- bullet trap at 1100 $\mu g/ft^2$.

The lead levels at two of these locations were above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). Access to the bullet trap should be limited, and employees should not be allowed to work in the bullet trap area without protective clothing until the area has been cleaned and re-sampled. Housekeeping should be maintained to insure that lead levels are kept as low as possible.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, housekeeping, visible mold, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems.

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

Interviews with employees concerning ergonomic concerns were not conducted because the unit was deployed on the date of the survey; therefore, no military personnel were present to interview.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Williamson, West Virginia
Date of Sampling: 01 December 2003

Sample Number	Location	Results,µg/ft² [a]
WVWIL335-1	Assembly room – flammable cabinet top surface (See Building Layout - - Appendix B)	47
WVWIL335-2	Assembly room – supply box top surface (See Building Layout – Appendix B)	55
WVWIL335-3	Assembly room – fire extinguisher top surface (See Building Layout - - Appendix B)	160
WVWIL335-4	Assembly room – gym equipment top surface (See Building Layout – Appendix B)	190
WVWIL335-5	Assembly room – table top (See Building Layout – Appendix B)	160
WVWIL335-6	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
General Air Samples for Lead
National Guard Armory
Williamson, West Virginia
Date of Sampling: 01 December 2003

Sample Number	General Sample Location	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVWII.335-A1	Readiness NCO Office	1250-1431/101	2.4519	247.64	<0.004
WVWII.335-A2	Field Blank	-	-	-	None Detected
WVWII.335-A3	Classroom #9	1250-1431/101	2.4969	252.18	<0.004

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3
Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature
National Guard Armory
Williamson, West Virginia
Date of Sampling: 01 December 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Drill Hall	1	509	23.1	67.1
Outdoors	-	476	36.4	45.3

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Williamson, West Virginia

Date of Sampling: 01 December 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
Commander's Office	15.9-30.3	70	No
Women's Latrine	3.8-11.1	40	No
Men's Latrine/Shower Room	11.9-45.1	40	Some Areas
Enlisted Men's Latrine	1.7-6.5	40	No
Main Hallway	2.79-20.8	7.5	Some Areas
Classrooms	16.6-29.5	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Range

National Guard Armory

Williamson, West Virginia

Date of Sampling: 01 December 2003

Sample Number	Location	Results, $\mu g/ft^{2}$ [a]
WVWIL335-7	Outside the range	5.2
WVWIL335-8	Floor	21
WVWIL335-9	Stored Item (filing cabinet top surface)	98
WVWIL335-10	Light Fixture	620
WVWIL335-11	Bullet Trap	1100
WVWIL335-12	Field Blank	< 0.3 µg

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Gaujot Armory West Virginia ARNG	Williamson

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / APO

URVEY DATE	EVALUATOR (Initials)
01 December 2003	Non-Responsive

IACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	XX	unknown - unit deployed

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304 255 2084	150th COA 1st BN AR / AR Recr DET 2 HHC 1st BN AR / AR Recr	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	unknown	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	3

IAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
1	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
7439-92-1	Lead Inorganic dusts & fumes, as Pb	2-moderate	C-Uncontrolled Respiratory
12001-29-5	Asbestos (Chrysotile)	3-low	↓
12172-73-5	Asbestos (Amosite)	2 moderate	↓

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Non-Responsive			M	NOT AVAILABLE	CIV

SECTION 6. COMMENTS

See attached sheet

Survey performed by Non-Responsive. Building contains one civilian custodian and an unknown amount of military full-time personnel if the unit was deployed on the date of the survey, and no list of military personnel was obtained.

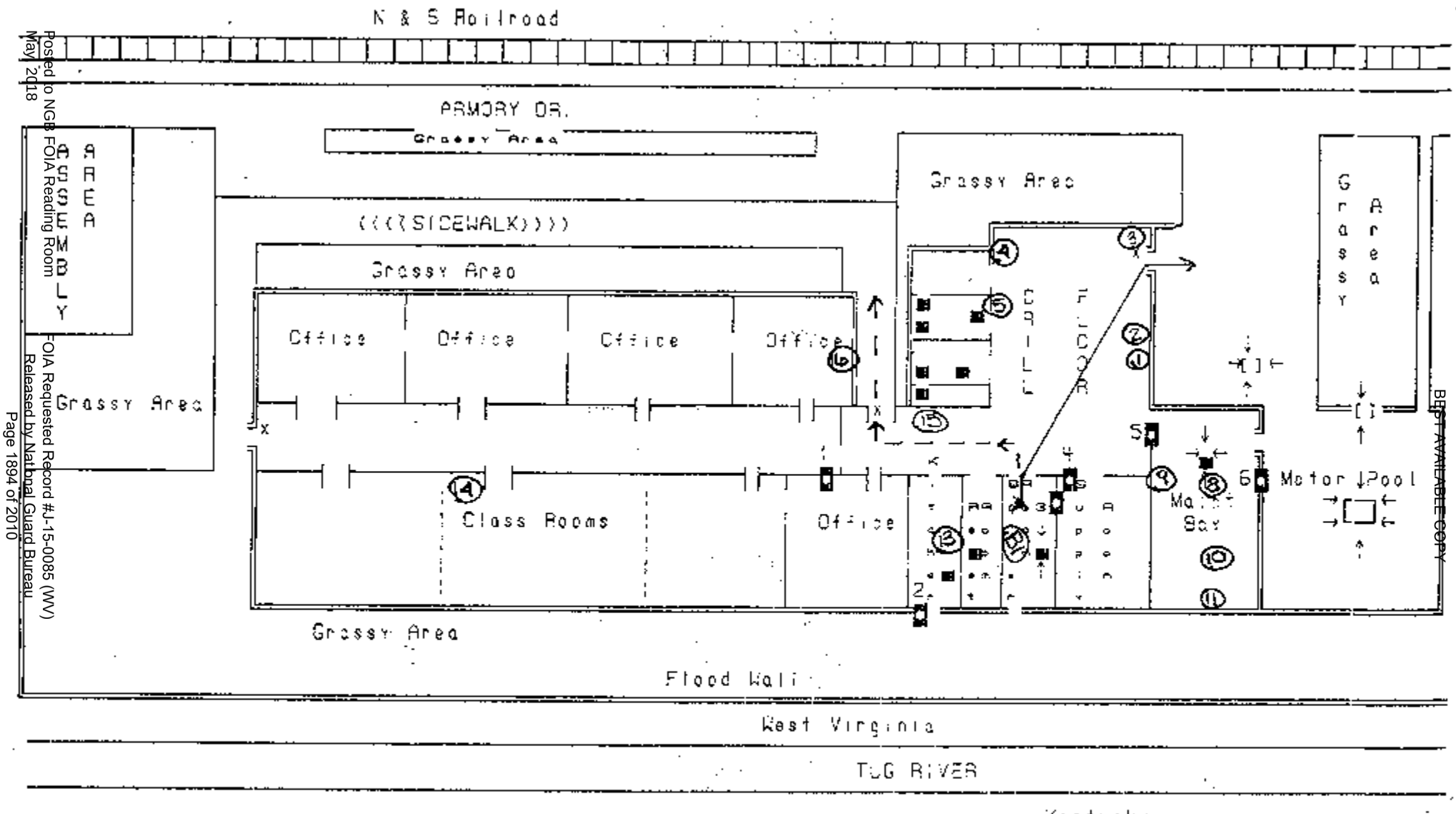
PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

Appendix B
Building Layout

FIRE EVACUATION PLAN



PRIMARY ESCAPE ROUTE
ALTERNATE ESCAPE ROUTE
■ -FIRE POINTS
[ ] -Ground Drains
■ -Floor Drains
x -Marked Exits
→↓← - Water Flow

GAUJOT ARMORY

Not to Scale

Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	WVWIL335	**Chain Of Custody:**	121252
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Williamson, WV	**Date Analyzed:**	12/15/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	17-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0413484	WVWIL335-1	Furnace	Wipe	****	0.111	13.50	ug/ft²	47	ug/ft²	
0413485	WVWIL335-2	Furnace	Wipe	****	0.111	13.50	ug/ft²	55	ug/ft²	
0413486	WVWIL335-3	Furnace	Wipe	****	0.111	67.51	ug/ft²	160	ug/ft²	
0413487	WVWIL335-4	Furnace	Wipe	****	0.111	67.51	ug/ft²	190	ug/ft²	
0413488	WVWIL335-5	Furnace	Wipe	****	0.111	67.51	ug/ft²	160	ug/ft²	
0413489	WVWIL335-6	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	
0413490	WVWIL335-7	Furnace	Wipe	****	0.111	2.70	ug/ft²	5.2	ug/ft²	
0413491	WVWIL335-8	Furnace	Wipe	****	0.111	2.70	ug/ft²	21	ug/ft²	
0413492	WVWIL335-9	Furnace	Wipe	****	0.111	33.75	ug/ft²	98	ug/ft²	
0413493	WVWIL335-10	Furnace	Wipe	****	0.111	67.51	ug/ft²	620	ug/ft²	
0413494	WVWIL335-11	Flame	Wipe	****	0.111	108.01	ug/ft²	1100	ug/ft²	
0413495	WVWIL335-12	Furnace	Wipe Blank	****	N/A	0.30	ug	< 0.3	ug	

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

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

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: Non-Responsive

Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
101 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	VAPOR329-A1 through WVWIL335-A3
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-6027
DCL Sample ID No.:	03-35454 through 03-35502
Sample Receipt Date:	12/11/2003
Preparation Date:	12/15/03
Analysis Date:	12/15/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
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WEST COAST OFFICE
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NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m³
VAPOR329-A1	03-35454	362.12	ND	<0.003
VAPOR329-A2	03-35455	355.29	ND	<0.003
VAPOR329-A3	03-35456	0	ND	-
VAVIR329-A1	03-35462	241.75	ND	<0.004
VAVIR329-A2	03-35463	239.35	ND	<0.004
VAVIR329-A3	03-35464	0	ND	-
WVWAL338-A1	03-35466	255.30	ND	<0.004
WVWAL338-A2	03-35467	246.10	ND	<0.004
WVWAL338-A3	03-35468	0	ND	-
WVBLU338-A1	03-35470	340.39	ND	<0.003
WVBLU338-A2	03-35471	326.60	ND	<0.003
WVBLU338-A3	03-35472	0	ND	-
VAGAT337-A1	03-35473	243.02	ND	<0.004
VAGAT337-A2	03-35474	254.11	ND	<0.004
VAGAT337-A3	03-35475	0	ND	-
VAHAM330-A1	03-35476	250.47	ND	<0.004
VAHAM330-A2	03-35477	255.99	ND	<0.004
VAHAM330-A3	03-35478	0	ND	-
VABIG336-A1	03-35479	343.24	ND	<0.003
VABIG336-A2	03-35480	307.31	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		96.	
% Recovery	LCS 2		98.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
VABIG336-A3	03-35481	0	ND	-
WVHIN339-A1	03-35486	238.94	ND	<0.004
WVHIN339-A2	03-35487	237.41	ND	<0.004
WVHIN339-A3	03-35488	0	ND	-
WVMON335-A1	03-35489	283.66	ND	<0.004
WVMON335-A2	03-35490	288.02	ND	<0.003
WVMON335-A3	03-35491	0	ND	-
WVRIC339-A1	03-35495	299.70	ND	<0.003
WVRIC339-A2	03-35496	296.83	ND	<0.003
WVRIC339-A3	03-35497	0	ND	-
VACED337-A1	03-35498	243.02	ND	<0.004
VACED337-A2	03-35499	254.11	ND	<0.004
VACED337-A3	03-35500	0	ND	-
WVWIL335-A1	03-35501	247.64	ND	<0.004
WVWIL335-A2	03-35502	0	ND	-
WVWIL335-A3	03-35503	252.18	ND	<0.004
	Prep Blank		ND	
% Recovery	LCS 3		101.	
% Recovery	LCS 4		98.	
RPL			**1.**	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Williamson
Date: 12/1/2003

Sample 1

Sample Number: WVWIL335-A1
Pump: 648339

	Pre Flow Rate	Post Flow Rate
	2.451	2.456
	2.457	2.451
	2.448	2.449
	2.45	2.453
Average	**2.452**	**2.452**

Average Pre and Post **2.4519**

Time 1	12:50
Time 2	14:31
Total Time Sampled	1:41
Minutes Sampled	101.00

Volume **247.64 Liters**

Sample 2

Sample Number: WVWIL335-A3
Pump: 657815

	Pre Flow Rate	Post Flow Rate
	2.507	2.489
	2.492	2.508
	2.495	2.487
	2.5	2.497
Average	**2.499**	**2.495**

Average Pre and Post **2.4969**

Time 1	12:50
Time 2	14:31
Total Time Sampled	1:41
Minutes Sampled	101.00

Volume **252.18 Liters**

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory **Location:** Williamson, WV
Date: 12/1/05

Sample 1

Sample Number: WVWIL3335-A1
Pump: 648389

	Pre Flow Rate	Post Flow Rate
	2451	2456
	2457	2451
Average	2448	2449
	2450	2453
Average Pre and Post	2452	2452

Time 1 1250
Time 2 1431
Total Time Sampled
Minutes Sampled

Volume **Liters**

Sample 2

Sample Number: WVWIL3335-A&3
Pump: 647615

	Pre Flow Rate	Post Flow Rate
	2507	2489
	2492	2508
Average	2495	2487
	2500	2497
Average Pre and Post	2499	2495

Time 1 1250
Time 2 1431
Total Time Sampled
Minutes Sampled

Volume **Liters**

DATA CHEM LABORATORIES, INC.

SUBMITTED TO:

Non-Responsive

Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

REFERENCE DATA:

Client Sample No.:	VAPOR329-B1 through WVWIL335-B1
P.O. No.:	1103
Sample Location:	West Virginia / Virginia
Sample Type:	Bulk
Method Reference:	EPA-600/R-93/116
DCL Set ID No.:	03-A-6027
DCL Sample ID No.:	03-35460 through 03-35505
Sample Receipt Date:	12/11/03
Analysis Date:	12/12/03

We certify that the following samples were prepared and analyzed by Polarized Light Microscopy for asbestos and other fibrous constituents using EPA-600/R-93/116. The samples were acceptable upon receipt except where noted. The samples were examined under a stereomicroscope in a laboratory fume hood for general composition and phase separation. If needed, portions of the sample were removed and ground with a mortar and pestle before being mounted on a glass microscope slide. Mountings of representative portions of the material are prepared in one or more appropriate refractive index liquids (1.550, 1.605, 1.680) and examined by Polarized Light Microscopy*. Estimates of concentration are made on an area basis. The results of the analysis apply only to the materials analyzed and are summarized on the attached bulk asbestos analysis data sheets. DataChem Laboratories will dispose of all bulk samples after 60 days unless other arrangements are made.

Non-Responsive

Analyst

Non-Responsive

Reviewer

*Floor tiles, decorative paints, joint compounds, and cement materials require additional treatment in order to evaluate the concentration of small asbestos fibers bound in the material. Some samples may contain fibers that are not visible by PLM and can only be detected by electron microscopy techniques. Floor tiles are analyzed as homogeneous materials if insufficient mastic is present or if phases have been cross contaminated.

DataChem Laboratories NVLAP Lab ID: 101917. Laboratory accreditation by the National Institute of Standards and Technology does not in any way constitute approval or endorsement by NIST.

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12/12/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia / Virginia
Set ID: 03-A-6027

Client Sample ID:	VAPOR329-B1	VAPOR329-B2	VAB16336-B1	VAB16336-B2	WVMON335-B1
DCL Sample ID:	03-35460	03-35461	03-35484	03-35485	03-35494
Macroscopic Examination					
Accepted/Rejected:	Accepted	Accepted	Accepted	Accepted	Accepted
Homogeneity:	Homog.	Homog.	Homog.	Homog.	Homog.
Color:	Grey	Black	Grey	Grey	Grey
Texture:	Crmby/Fbrs	Compact	Crumbly	Crmby/Fbrs	Pwdry/Fbrs
Description:	Material	Tile	Material	Material	Material
Analysis:	PLM	PLM	PLM	PLM	PLM
Asbestiform Minerals					
% Chrysotile:		>1≤3	>1≤3		>1≤3
% Amosite:					>10≤20
% Crocidolite:					
% Tremolite - Actinolite:					
% Anthophyllite:					
% Total Asbestos:	**ND**	**>1≤3**	**>1≤3**	**ND**	**>11≤23**
Other Materials					
% Cellulose:	>1≤3			>5≤10	
% Fiberglass:	>20≤30			>20≤30	>20≤30
% Other Fibers:					
% Resin/Binder:		>10≤20			
% Non Fibrous:	>60≤70	>70≤80	>90≤100	>50≤60	>40≤50

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

12/12/03

DataChem Laboratories
Polarized Light Microscopy
Asbestos Analytical Report

Client: Shaw Environmental, Inc.
Location: West Virginia / Virginia
Set ID: 03-A-6027

Client Sample ID:	WVWIL335-B1
DCL Sample ID:	03-35505
Macroscopic Examination	
Accepted/Rejected:	Accepted
Homogeneity:	Homog.
Color:	Grey
Texture:	Pwdry/Fbrs
Description:	Material
Analysis:	PLM
Asbestiform Minerals	
% Chrysotile:	>3≤5
% Amosite:	>10≤20
% Crocidolite:	
% Tremolite - Actinolite:	
% Anthophyllite:	
% Total Asbestos:	**>13≤25**
Other Materials	
% Cellulose:	Trace
% Fiberglass:	
% Other Fibers:	
% Resin/Binder:	
% Non Fibrous:	>70≤80

ND = None Detected Trace = <1%

Special Prep Procedures: None.

*Notes: P. O. #: 1103.

Non-Responsive

Microscopist

All values are in area percent by visual estimate. The Federal Register Vol. 55 No. 224 Tuesday Nov. 20 1990 Rules and Regulations states "... If the asbestos content is estimated to be less than 10% by a method other than point counting,... (the analysis) be repeated using the point counting technique by PLM." Any of the above samples can be reanalyzed by point counting at the client's request.
Wherever possible, separate phases are analyzed and reported individually.

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

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




Industrial Hygiene Survey
for WVARNG – Williamson Readiness Center
1603 Armory Drive
Williamson, West Virginia 25661

AECOM
December 2012
Document No.: 60275401.1/Williamson Readiness Center

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

Industrial Hygiene Survey
for WVARNG – Williamson Readiness Center
1603 Armory Drive
Williamson, West Virginia 25661

Non-Responsive
Industrial Hygienist

Non-Responsive
Project Manager

Non-Responsive
Northeast District Health & Safety Manager

AECOM
December 2012
Document No.: 60275401.1/Williamson Readiness Center

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Executive Summary

On October 18, 2012, AECOM conducted an Industrial Hygiene (IH) survey of the Williamson Readiness Center facility located at 1603 Armory Drive in Williamson, West Virginia. Non-[redacted], SFC was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Williamson Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Williamson Readiness Center is currently staffed by five personnel. Some of the personnel were not present at the time of the survey due to active duty assignments or other off-site responsibilities. The facility is configured as an administrative area and an Assembly/Drill Hall.

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

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

The Williamson Readiness Center is housed in a one-story masonry building, and consists of approximately 60% administrative space and 40% Assembly Hall.

Lighting levels measured throughout the facility were generally adequate as per American National Standards Institute (ANSI) / Illuminating Engineering Society of North America (IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected for lead-containing dust in the former firing range indicated lead levels above the ARNG action level.

No peeling lead-based paint was observed at the Williamson Readiness Center at the time of the survey.

No visible damaged friable suspect asbestos-containing material (ACM) was observed.

No visible water damaged or visible signs of mold growth were observed at the Williamson Readiness Center.

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

1.0 Facility Description and Operations

The Williamson Readiness Center, constructed in 1958, is a one-story administrative facility slab on-grade masonry structure. The building consists of two main sections. The lager one-story section consists primarily of offices and administrative areas, and is finished with sheetrock walls, lay-in ceiling tiles and floor tile. The two-story Assembly/Drill Hall area is finished with painted block walls and a concrete floor. According to site personnel there is a former firing range located at the facility.

The primary activity at the Williamson Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Assembly Hall is frequently rented out for limited civic activities such as group meetings, trade shows, and school activities and to other related local groups and organizations. The Williamson Readiness Center is currently staffed by five personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the Assembly Hall and administrative areas following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
Pb – 001	Assembly Hall - table	<110 ug/ft^2
Pb – 002	Kitchen - counter	<110 ug/ft^2
Pb – 003	CO Office - desk top	<110 ug/ft^2
Pb – 004	Classroom - cabinet	<110 ug/ft^2
Pb – 005	Foyer/Corridor - floor	<110 ug/ft^2
Pb – 006	Storage (Former Firing Range – heater unit)	630 ug/ft^2
Pb – 007	Storage (Former Firing Range – stored item)	890 ug/ft^2
Pb – 008	Storage (Former Firing Range – floor)	<110 ug/ft^2
Pb – 009	Assembly Hall - floor	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the former Firing Range –heater unit and former Firing Range – stored item indicated levels of lead in excess of 200 ug/ft^2. Specific parts (ie. bullet trap) associated with the former firing range have been removed. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls and ceilings are coated with paint and appeared to be generally in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint at the time of the survey.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Williamson Readiness Center during this survey. Thermal system piping is typically covered in typical fiberglass insulation with associated fittings and appeared in good condition.

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

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion at the time of the survey.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section of the building contains general office space. The administration section is generally utilized by all of the Williamson Readiness Center staff members including a recruiter. No Indoor Air Quality concerns were noted by the Williamson Readiness Center personnel.

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

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Room 8 - Classroom	1.0	316	73.5	47.1
Room 6 - CO Office	0.6	319	74.1	47.2
Administrative Corridor	0.6	387	74.5	45.7
Room 4 - Recruiter Office	0.7	350	74.9	44.5
Room 10 - Classroom	1.1	311	75.0	44.0
NCO Office	1.0	324	75.1	43.7
Kitchen	0.7	328	74.5	45.0
Assembly/Drill Hall	0.6	307	73.7	43.9

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Men's Restroom	1.1	378	73.5	51.3
Locker Room	0.6	348	73.9	51.8
Boiler Room	0.7	379	73.2	46.4
Fire Range	0.6	303	70.7	46.4

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

There is no Field Maintenance Shop (FMS) located at the Williamson Readiness Center. As such, no potential for contamination of clean air sources was observed at the facility.

The Williamson Readiness Center is heated by a boiler that feeds a radiant heating system. Supply and return air is not provided by mechanical means as there is no active ventilation system.

4.1.2 HVAC Maintenance

There was no active HVAC system observed. However, building personnel reported that the boiler is inspected annually and any associated filters changed at twice a year.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were generally adequate with the exception of the three areas noted below.

Table 5-1: Light Survey

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Room 8 - Classroom	33.6	Y	30
Room 6 - CO Office	48.5	N	50
Administrative Corridor	27.8	Y	5
Room 4 - Recruiter Office	40.7	N	50
Room 10 - Classroom	49.2	Y	30
NCO Office	66.7	Y	50
Kitchen	62.6	Y	50
Assembly/Drill Hall	17.2	Y	10
Men's Restroom	14.3	Y	5
Locker Room	52.6	Y	7
Boiler Room	31.7	Y	30
Storage (Former Firing Range)	15.7	N	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is no attached garage associated with the Salem Readiness Center.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Williamson Readiness Center.

AECOM did not observe any damaged, friable suspect asbestos-containing materials at the Williamson Readiness Center.

AECOM did not observe peeling lead-based paint at the Williamson Readiness Center.

AECOM did not observe evidence of water intrusion at the Williamson Readiness Center.

Lighting levels measured throughout the facility were generally adequate, with the exception of three areas noted in Table 5-1, as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005 with the exception of the CO Office, Recruiter Office, and the Fire Range.

Wipe samples collected in association with the administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United States Department of Housing and Urban Development's (HUD) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. However, wipe samples collected from the Fire Range –heater unit and Fire Range – stored item indicated levels of lead in excess of 200 ug/ft^2.

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

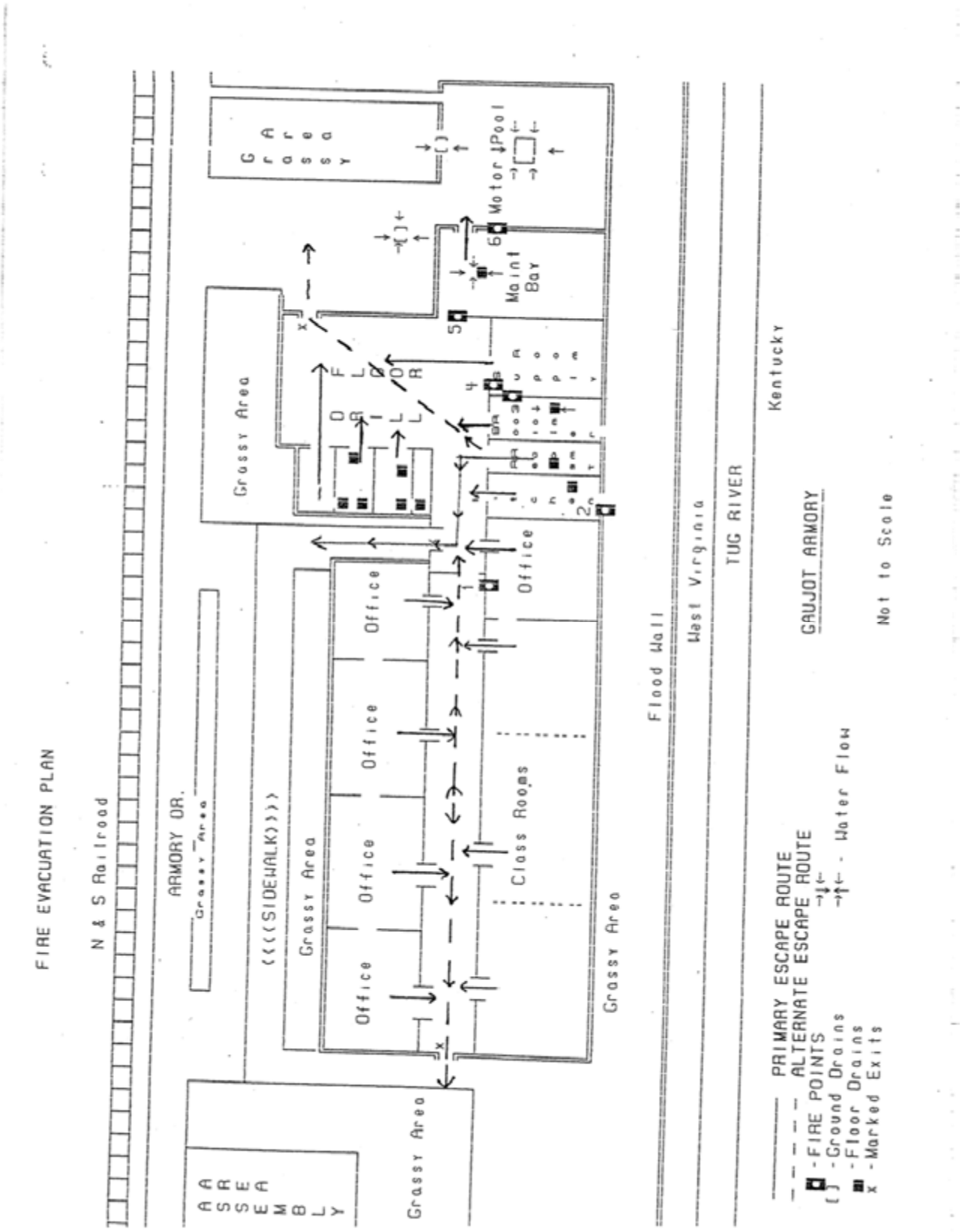
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive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

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

Appendix A

Williamson Readiness Center Facility Layout

AECOM



Appendix B

Williamson Readiness Center Photographs

AECOM

Photograph 1

View of Building Exterior

Photograph 2

View of Foyer

AECOM

Photograph 3

View of Office Area

Photograph 4

View of Classroom

AECOM

Photograph 5

View of Recruiter Office

Photograph 6

View of New Pipe Insulation in Corridor

AECOM

Photograph 7

View of Kitchen

Photograph 8

View of Physical Fitness Area in Assembly Hall

AECOM

Photograph 9

View of HVAC System in Assembly Hall

Photograph 10

View of Assembly Hall

AECOM

Photograph 11

View of Former Gun Range

Photograph 12

View of Parts Washing Bin

AECOM

Photograph 13

View of Flammable Storage Cabinet

Photograph 14

View of Storage Room

AECOM

Photograph 15

View of MSDS Information Station

Photograph 16

View of Locker Room

Appendix C

Analytical Results

AECOM

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:	Williamson RC	Chain Of Custody:	514262		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/26/2012	Report Date:	10/26/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13008288	Pb-001	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008289	Pb-002	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008290	Pb-003	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008291	Pb-004	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008292	Pb-005	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008293	Pb-006	Flame	Wipe	****	0.111	110	ug/ft²	70	630	ug/ft²	
13008294	Pb-007	Flame	Wipe	****	0.111	110	ug/ft²	99	890	ug/ft²	
13008295	Pb-008	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008296	Pb-009	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD. 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

AECOM

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:**	Williamson RC	**Chain Of Custody:**	514262		
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	West Virginia	**Date Submitted:**	10/23/2012		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	AECOM		
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	10/26/2012	**Report Date:**	10/26/2012

Attention: Non-[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	Total ug	Final Result	Comments

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

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

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

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

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

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

Air and Wipe results are not corrected for any blank results

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

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

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

Ana Non-Responsive [redacted]

Technical Manager: Non-Responsive [redacted]

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

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514262

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

Submittal Information:
1. Job Name: Williamson RC
2. Job Location: West Virginia
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ p
5. Submitted by: AECOM (Signature) Non-Responsive

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day an e.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email Non-Responsive aecom.com
Comments:	☐ 2 Day Date Due: 10/30/12	☐ Fax Non-Responsive us.army.mil
		☐ Verbo us.army.mil

Asbestos Analysis
*PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air* – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan) If field data sheets are submitted, there is no need to complete bottom section.
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/ares) Vacuum D5755-95 (QTY)
☐ Quan. (s/ares) 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) 9 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID #	SAMPLE INFORMATION / SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 10/30/12 @ Via: FedEx By (Pri
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/4/12
Job Number: 60275401
Contact Person: Non-Responsive

Job Name: Williamson RC
Job Location: West Virginia
Address: 1603 Armory Dr.
Williamson, WV

Company: AECOM
Phone Number: 3154320500
Collected By: Non-Responsive
COC Number: —

Page 1 of

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
Pb-001	Drill Hall	Table	1 in^2	Ghost Wipe
Pb-002	Kitchen	Counter		
Pb-003	CO Office	Desk		
Pb-004	Classroom	Cabinet		
Pb-005	Foyer	Floor		
Pb-006	Former Range	O/H Heater		
Pb-007	"	Cabinet		
Pb-008	"	Floor		
Pb-009	Outside Range	Floor	"	"

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

References

References

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

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4. AR 40-5, Medical Service, Preventive Medicine, 25 May 2007. http://armypubs.army.mil/epubs/pdf/R40_5.PDF

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6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://armypubs.army.mil/epubs/pdf/P40_501.pdf

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14. ANSI/ASHRAE 62.1-2010, Ventilation for Acceptable Indoor Air Quality.

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

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

17. OSHA Instruction Letter 02-02-058, Lead Exposure in Construction, Office of Health Compliance Assistance, 13 December 1993.

18. OSHA Standard Interpretation, Clarification of “as free as practicable” and lead contamination under 29 CFR 1926.62, dated January 13, 2003.

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Shaw® Shaw Environmental, Inc.

National Guard Armory
Wood County Readiness Center – Williamstown, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:

Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

26 May 2004

National Guard Armory
Wood County Readiness Center – Williamstown, West Virginia

Industrial Hygiene Evaluation

Prepared for:

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

Prepared by:
Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923

26 May 2004

Prepared by: Non-Responsive _____
Industrial Hygienist

Reviewed by: Non-Responsive _____
Business Line Manager

Table of Contents

List of Tables

List of Appendices

Executive Summary

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Wood County Readiness Center in Williamstown, West Virginia. Non-Responsive performed the evaluation on 03 November 2003. The point of contact at the readiness center was Major Non-Responsive

The following industrial hygiene concerns were evaluated.

- Wipe Sampling for Lead
- Air Sampling for Lead
- Peeling Paint – Lead
- Suspected Asbestos Containing Material
- Water Damage
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Indoor Air Quality
- Safety and Industrial Hygiene Programs
- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- Lighting
- Converted Indoor Firing Range
- HVAC Systems

The following items were either not applicable to the armory or the evaluation resulted in a conclusion that there were no industrial hygiene concerns.

- Air Sampling for Lead
- Peeling Paint – Lead
- Presence of Mold
- Housekeeping
- Ergonomic Concerns
- Safety and Industrial Hygiene Programs

- Ventilation System Evaluation
- Contamination of Clean Air Sources
- Noise Exposure
- HVAC Systems

Areas where there were industrial hygiene concerns are as follows:

- Wipe sampling for lead revealed concentrations above the recommended level in the assembly hall of the armory. It is recommended that these surfaces and the areas immediately around these surfaces be thoroughly cleaned to reduce the lead level. In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.
- Wipe sampling for lead revealed concentrations above a level of 40 micrograms per square foot ($\mu g/ft^2$) in the assembly hall, medics room #24, training room, men's latrine, and converted firing range. Areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.
- Materials (floor tiles and pipe insulation) suspected of containing asbestos were observed. It is recommended that an operations and maintenance plan be followed when performing any activities that may disturb the suspected asbestos-containing materials.
- Water damage was observed at the armory. The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.
- Indoor air quality measurements for temperature revealed levels that exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.
- Lighting measurements were conducted at the armory. The lighting did not meet minimum requirements in all of the areas measured; therefore consideration should be given to providing more lighting in these areas. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls

with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

- Wipe sampling for lead in the converted firing range revealed a concentration above the recommended level. This area must be decontaminated by a thorough cleaning until surface the lead concentration is reduced to below recommended levels. In addition, stored items should be wet- wiped before being removed from the area. Employees should not be allowed to work in this area without protective clothing until the area has been cleaned and re-sampled.

1.0 Introduction

Shaw Environmental, Inc. (Shaw) was contracted to perform an industrial hygiene evaluation for the Wood County Readiness Center in Williamstown, West Virginia. Non-Responsive erformed the evaluation on 03 November 2003. The point of contact at the readiness center was Majo Non-Responsive

The findings, discussion, and interpretation of results are provided in Section 2.0. The conclusions are provided in Section 3.0. The HHIM data form for the facility is provided in Appendix A. The building layout is provided in Appendix B. Sampling sheets and laboratory analyses are provided in Appendix C. References are provided in Appendix D. The *Recommendations for Surface Lead Dust in Armories* document is provided in Appendix E.

The statements, opinions, and conclusions contained in this report are based solely upon the services performed by Shaw as described in the report. In performing these services and preparing the report, Shaw Environmental, Inc. relied upon the work and information provided by others, including public agencies, whose information is not guaranteed by Shaw Environmental, Inc.

2.0 Findings, Discussion, and Interpretation of Results

The results, discussion, and interpretation of results are provided in the following sections.

2.1. Sampling for Lead

2.1.1 Wipe Sampling

Wipe samples were collected for lead from the drill/assembly hall. Also, wipe samples were collected for lead in rooms, hallways, foyers, etc. The sampling in rooms, hallways, foyers, etc. represented approximately 25% of the building. Approximately half of the samples were collected from surfaces in common areas, such as surfaces of a desk. The remaining samples were collected from uncommon surface areas, such as a supply vent or the top of a file cabinet. The samples were collected and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

The only samples initially submitted for analysis were those from the drill/assembly hall. If there were any positive results from the drill/assembly hall, the other samples would be submitted for analysis.

Results of the wipe sampling are provided in Table 1. The results revealed lead at all locations sampled at concentrations below recommended level of 200 micrograms lead per square foot ($\mu g/ft^2$) (See Appendix I:) except at three locations. Three samples collected from the assembly hall (locker #19 top surface, amnesty box top surface, and locker #4 top surface) had lead concentrations of 890, 290 and 590 $\mu g/ft^2$. It is recommended that these surfaces and the immediate area around these surfaces be thoroughly cleaned to reduce the lead level to below 200 $\mu g/ft^2$. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). In addition, any other dusty/dirty areas in the assembly area/drill floor should be thoroughly cleaned.

In addition, wipe sampling for lead revealed concentrations above a level of 40 $\mu g/ft^2$ in the assembly hall, medics room #24, training room, men's latrine, and converted firing range. Please note that the *Recommendations for Surface Lead Dust in Armories* (Appendix E) states that all areas with lead concentrations above 40 $\mu g/ft^2$ that will be accessible to children should be cleaned. If a special function is 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.

2.1.2 Air Sampling for Lead

Breathing zone air sampling was conducted on two (2) full-time building occupants. (Please note that no state employees were monitored.) The samples were collected and analyzed in accordance with Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods.

The results of the sampling are provided in Table 2. The results revealed non-detectable concentrations of lead in the breathing zone of the employees; therefore, no actions are necessary.

2.2 Physical Condition of Facility

2.2.1 Peeling Paint - Lead

Peeling paint was not observed at the armory; therefore, bulk samples for lead in paint were not taken.

2.2.2 Visual Inspection - Asbestos

A visual inspection was made to determine if there was any suspected asbestos-containing material at the armory. Materials suspected of containing asbestos were observed. The suspected asbestos-containing materials were floor tiles and pipe insulation. The floor tiles were observed in the personnel room #1, conference room #3, mail room #3B, training room #35, BN/CSM room #7, battalion command room #6, 146th MED CO (AA) Admin Room #8, 146th MED CO (AA) CDR/1SG room #8A, recruiting room #10, readiness room #12, main hallway, and hallway to the second floor (approximately 3692 square feet). The condition of the floor tiles was considered good in most areas. The condition of the tiles in offices at the desk areas where the chairs sit was average (worn). The pipe insulation was observed in the boiler room. Approximately thirty-seven pipe joints/elbows remain with suspected

asbestos containing pipe insulation. The condition of the insulation was considered good (no rips, tears, or other damage).

An operation and maintenance plan should be followed when performing any activities that may disturb the suspected asbestos-containing materials.

2.2.3 Visual Inspection – Water Damage and Mold

A visual inspection was made to determine if there was any water damage or visible mold at the armory. No visible mold was observed, however, the inspection revealed water damage on the ceiling and wall of personnel room #1. In addition, old water damage was observed on the ceiling and wall in classroom #2.

The source of the water damage was likely from roof leaks. The source of the water damage should be confirmed and actions taken to eliminate the source in order to prevent the possibility of mold growth that may lead to indoor air quality problems.

2.2.4 Visual Inspection - Housekeeping

The housekeeping was determined to be good.

2.3. Building Concerns

2.3.1 Ergonomic Concerns

Interviews with employees and observation of work activities revealed no ergonomic concerns at the armory.

2.3.2 Indoor Air Quality

Interview with employees and measurements for carbon dioxide and humidity revealed no indoor air quality concerns at the armory. However, measurements for temperature revealed levels that exceeded the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommended level of acceptable temperature range to be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter in the armory. The heating units should be adjusted so the temperature will fall within the acceptable range. In addition, fans could be used for cooling purposes.

The results of the measurements for carbon dioxide, humidity, and temperature are provided in Table 3.

2.4. Safety and Industrial Hygiene Programs

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

- Confined Spaces
- Hearing Conservation
- Respiratory Protection
- Hazard Communication (HAZCOM)
- Personal Protective Equipment (PPE)

It was determined that the HAZCOM program was the only program listed above that was applicable at the facility. The HAZCOM program was evaluated and it was determined that the program met minimum requirements.

2.5. Ventilation

2.5.1 Ventilation System Evaluation

There were no local exhaust ventilation systems at this armory; therefore, no ventilation studies were performed.

2.5.2 Contamination of Clean Air Sources

Since there were no local exhaust ventilation systems at the armory, there was no possibility that clean air sources could be contaminated by exhaust air.

2.6. Noise Exposure

An evaluation was performed to determine if there were any hazardous noise areas at the armory. It was determined that there were no areas at the armory that would exceed the permissible exposure limit for noise.

2.7 Lighting

Lighting measurements were conducted at the armory. Results of the lighting evaluation are provided in Table 4. As can be seen from the results, the lighting did not meet the minimum requirements in all areas, including the personnel room #1, classroom room #2, kitchen room #4, training room #5, ladies room #14, 146th MED CO (AA) admin room #8, and 146th MED CO (AA) readiness room #12.

Consideration should be given to providing more lighting to the areas listed above. This may be accomplished by replacing burnt out luminaries, cleaning fixtures, cleaning windows, painting walls with a lighter color, repositioning detailed work to higher illuminated areas, and using supplemental lighting.

2. 8 Converted Indoor Firing Ranges

There was a converted indoor firing range at the facility; therefore, wipe samples were taken for lead at various locations in or near the converted range. The firing range was converted into a storage room. The results are provided in Table 6. The results revealed lead, with associated concentrations, at the following locations:

- floor outside the range at 82 micrograms lead per square foot ($\mu g/ft^2$);
- floor at 32 $\mu g/ft^2$;
- stored item (heater vent top surface) at 140 $\mu g/ft^2$; and
- light fixture at 1300 $\mu g/ft^2$.

The lead level at one of these locations was above the recommended level of 200 $\mu g/ft^2$, a level recommended in the *Guidelines for Converting Indoor Firing Ranges to Other Uses* document (Department of Army). These areas must be decontaminated by a thorough cleaning until surface lead concentrations are reduced to below recommended levels. In addition, stored items should be wet-wiped before being removed from the area. For guidance on the proper method of cleaning, please refer to NG PAM 385-16 (*Guidelines for Converting Indoor Firing Ranges to Other Uses*). Employees should not be allowed to work in this area without protective clothing until the area has been cleaned and re-sampled.

2.9. HVAC System

There was not a HVAC system at the armory.

2.10. HHIM

A Health Hazard Information Module (HHIM) form was completed for the armory. The completed form is provided in Appendix A.

3.0 Conclusions

It is concluded that there were no industrial hygiene concerns at the armory with regards to atmospheric exposure to lead, peeling lead-based paint, visible mold, ergonomic concerns, housekeeping, safety and industrial hygiene programs, ventilation systems or contamination of clean air sources, noise exposure, and HVAC systems

There were industrial hygiene concerns at the armory with regards to lead surface contamination, suspected asbestos-containing material, water damage, indoor air quality, lighting, and surface lead contamination in the converted firing range. These concerns are discussed in detail in Section 2.0 of this report.

TABLES

Table 1
Wipe Sampling for Lead
National Guard Armory
Williamstown, West Virginia
Date of Sampling: 03 November 2003

Sample Number	Location	Results,µg/ft² [1]
WVWIL307-7	Assembly room – locker #84 top surface (See Building Layout – Appendix B)	25
WVWIL307-8	Assembly room – locker #19 top surface (See Building Layout – Appendix B)	890
WVWIL307-9	Assembly room – control (power) box top surface (See Building Layout – Appendix B)	29
WVWIL307-10	Assembly room – amnesty box top surface (See Building Layout – Appendix B)	290
WVWIL307-11	Assembly room – locker #4 top surface (adjacent to kitchen) (See Building Layout – Appendix B)	590
WVWIL307-12	Field Blank	0.34 µg
WVWIL307-17	First Floor – Kitchen – microwave top surface	2.9
WVWIL307-18	Field Blank	0.35 µg
WVWIL307-20	First Floor – Room #12 – desktop	3.6
WVWIL307-21	First Floor – Room #8 – cabinet top surface	3.1
WVWIL307-22	First Floor – Room #1 – desktop	8.2
WVWIL307-23	Second Floor – Room #24 – shelf surface	65
WVWIL307-24	Field Blank	< 0.3 µg
WVWIL307-25	Second Floor – Gym – shelf surface	22
WVWIL307-26	First Floor – Training Room – inlet air grille	52
WVWIL307-27	First Floor – Men's Latrine – locker top surface	87

[1] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of Army National Guard Armories* procedure.

In armories that do not contain childcare facilities, the NGB Region North Industrial Hygiene Office recommends cleaning the areas with lead concentrations greater than 200 µg/ft².

Table 2
Breathing Zone Air Samples for Lead
National Guard Armory
Williamstown West Virginia
Date of Sampling: 03 November 2003

Sample Number	Employee	Sampling Information			Results (mg/m^3) [a]
		Time Sampled / Minutes	Flow Rate (lpm) [b]	Volume (liters)	
WVWIL307-A1	Non-Responsive	1310-1517/127	2.5243	320.58	<0.003
WVWIL307-A2		1311-1519/128	2.5011	320.14	<0.003
WVWIL307-A3	Field Blank	-	-	-	None Detected

[a] Milligrams lead per cubic meter of air.
[b] Liters of air per minute.

Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods was followed for sampling for lead.

Table 3

Indoor Air Quality Measurements for Carbon Dioxide, Humidity, and Temperature

National Guard Armory

Williamstown, West Virginia

Date of Sampling: 03 November 2003

Location	Occupants in Area	Carbon Dioxide, parts per million parts of air (ppm)	Percent (%) Humidity	Temperature (°F)
1st Floor - Classroom	1	495	44.1	81.1
2nd Floor - Room #24	1	493	55.1	75.6
Outdoors	-	473	49.5	76.5

Carbon dioxide, humidity, and temperature measurements were taken with a TSI Q Trak Plus, Model 8554, Indoor Air Quality Meter, calibrated in April 2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) recommends that indoor carbon dioxide levels be less than 700 ppm above outdoor levels.

ASHRAE recommends that the relative humidity levels be maintained between 30 to 60 percent.

ASHRAE recommends that the acceptable temperature range be 68 degrees Fahrenheit to 74 degrees Fahrenheit in the winter and 73 degrees Fahrenheit to 79 degrees Fahrenheit in the summer.

Table 4

Illumination Readings

National Guard Armory

Williamstown, West Virginia

Date of Sampling: 03 November 2003

Location	Luminance (fc)[a]	Standard (fc)[a]	Standard Met
First Floor – Personnel Room #1	29.5-48.7	70	No
First Floor - Classroom Room #2	32.1-61.4	70	No
First Floor – Kitchen Room #4	11.1-25.6	70	No
First Floor - Training Room #5	26.4-51.3	70	No
First Floor - Ladies Room #14	2.98-15.6	40	No
First Floor - 146th Med CO (AA) Admin. Room #8	22.1-45.3	70	No
Second Floor - 146th Med CO (AA) Readiness Room#12	23.9-43.6	70	No

[a] fc - Footcandles

The readings were taken with a Cooke Corporation cal-LIGHT 400 Calibrated Precision Lightmeter, calibrated on 19 Aug 2002.

The standards listed above are from ANSI/IES RP-1 and RP-7.

Table 5

Wipe Sampling for Lead – Converted Firing Renge

National Guard Armory

Williamstown, West Virginia

Date of Sampling: 03 November 2003

Sample Number	Location	Results, $\mu g/ft^2$ [a]
WVMOU307-13	Floor Outside of Range	82
WVMOU307-14	Floor	32
WVMOU307-15	Stored Item – heater vent top surface	140
WVMOU307-16	Lighting fixture – light shield surface	1300

[a] Micrograms lead per square foot

The samples were taken and analyzed in accordance with the Instructions for *Completing the Sampling of ARMY National Guard Armories* procedure.

Appendix A
HHIM Data Form(s)

HEALTH HAZARD INFORMATION MODULE: INDUSTRIAL HYGIENE SURVEY

(For use of this form, see HHIM User's Guide)

SECTION 1. DEMOGRAPHIC DATA

RLOC	INSTALLATION	BLDG/RM NO.
	Wood County Armory West Virginia ARNG	Williamstown

OCATION/CODE	OPERATION/CODE
Administrative Areas / AA	Administrative Operations / ADO

URVEY DATE	EVALUATOR (Initials)
03 November 2003	Non-Responsive

MACOM/CODE	SUBMACOM/CODE	SUPERVISOR
Army National Guard	X X	Non-Responsive MAJ

ELEPHONE/DSN NO.	UNIT/ORGANIZATION	RAC	FREQUENCY (hrs/day)
304-464-4370	Headquarters 172nd (Aviation) Troop Command	4	8

IO. CIV(S)	NO. MIL	NO. CONTRACTOR(S)	NO. LOC(S)	NO. OTHER
1	11	0	0	0

SECTION 2. FACILITY DATA

AB HOODS	VAPOR DEGREASERS	SPRAY BOOTHS
0	0	0

MAINTENANCE BAYS	OPEN SURFACE TANKS	VENTILATION UNITS
0	0	0

SECTION 3. SURVEY DATA

CONTROLS PRESENT	EVALUATION	UNIT CODE	CONTROLS REQUIRED	STATUS

PERSONAL PROTECTIVE EQUIPMENT (R = Required; U = Utilized)

GLOVES	R	U	RESPIRATOR	NIOSH TC NO.	MANUFACTURER	R	U
ACID			AIRLINE				
COLD SURFACES			ABRASIVE BLASTING HOOD				
HOT SURFACES			DISPOSABLE				
NBC AGENTS			FULL FACE AIR PURIFYING				
OIL			1/2 FACE AIR PURIFYING				
SOLVENTS			POWERED AIR PURIFYING				
SURGICAL GLOVES			1/4 FACE AIR PURIFYING				
			SELF CONTAINED				

EYES/FACE	R	U	HEARING	R	U	BODY	R	U	HEAD/FIT	R	U
CHEMICAL SPLASH			CANAL CAPS			APRONS			COLD WEATHER BOOTS/HATS		
FULL FACE SHIELD			EAR PLUGS			COLD WEATHER CLOTHING			HARD HATS		
CHEMICAL/SAFETY			HELMETS			COVERALLS			IMPERMEABLE BOOTS		
SAFETY/IMPACT			MUFFS			FULL BODY SUIT			SAFETY/CONDUCTIVE SHOES		
WELDING HELMET			MUFF/EARPLUG COMBO			HEAT REFLECTIVE VEST/SUIT			SAFETY/NON-CONDUCTIVE SHOES		
			MUFF/EARPLUG W/TIME LIMIT			SAFETY BELT/HARNESS					

SECTION 4. HAZARD INVENTORY DATA

CAS CODE	HAZARD DESCRIPTION	PAC	EPC
POVDTXXXX	Video Display Terminal	3-low	D-Uncontrolled Physical
7439-92-1	Lead Inorganic dusts & fumes as Pb	2-moderate	2-Uncontrolled Respiratory
1332-21-4	Asbestos (Other)	2-moderate	2-Uncontrolled Respiratory
POHEATSTR	Heat Stress	3-low	Uncontrolled Physical

SECTION 5. PERSONNEL DATA

LAST NAME	FIRST NAME	MI	SEX	SSN	CATEGORY
Please see attached list, note SSN not available, caretaker is a civilian employee all others are military					

SECTION 6. COMMENTS

Non-Responsive

___No comments See attached sheet

conducted the survey Building contains 11 Fulltime military staff and 1 civilian caretaker, Fulltime military staff perform mainly administrative functions

PRIVACY ACT STATEMENT

Title 5 US Code, Section 301; Executive Order 9397 authorizes the use of your Social Security Number as an identification number. The purpose of this information is to identify and monitor data relating each DA civilian and military employee exposed to a hazardous workplace or operation. The use of this information is to provide histories of exposures for any given worker.

Disclosure of your Social Security Number is not mandatory; however, nondisclosures may result in untimely provision of proper medical monitoring.

WEST VIRGINIA ARMY NATIONAL GUARD

HEADQUARTERS, 772ND (AVIATION) TROOP COMMAND
113 ALMA DRIVE
WILLIAMSTOWN, WEST VIRGINIA 26187-9791

WVAR-772-CDR

03 November 2003

MEMORANDUM FOR Record

SUBJECT: Full Time Employees of the Wood County Armory

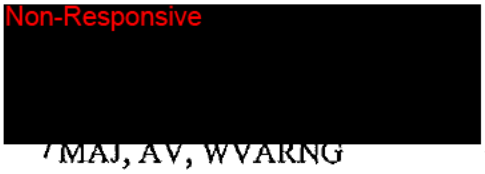
1. The full time personnel that work in the Wood County Armory are listed below:

Non-Responsive

2. Any questions or comments concerning this memorandum should be directed to the undersigned at 304-464-5125 or DSN 6158/59.

FOR THE COMMANDER

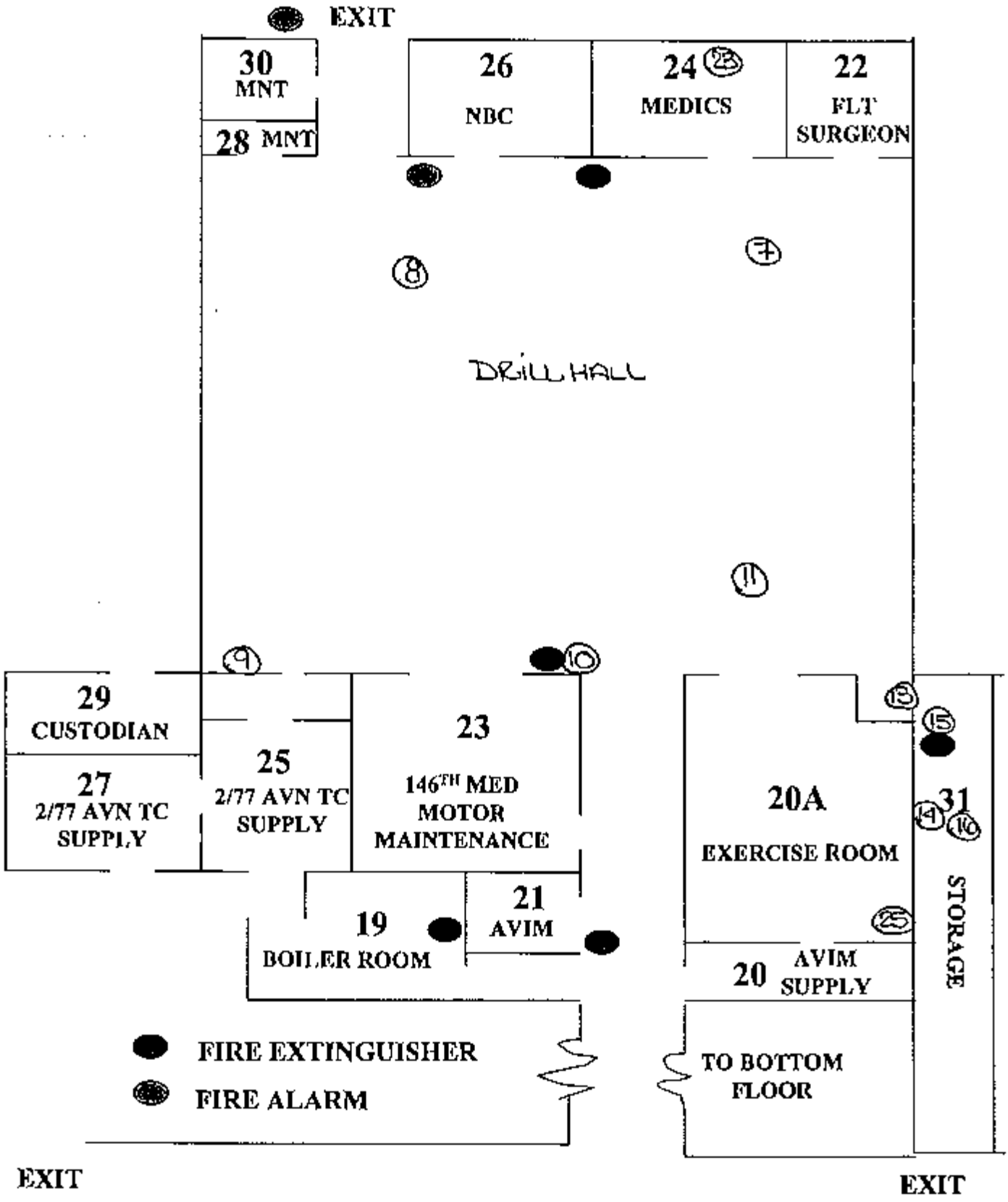
Non-Responsive



/MAJ, AV, WVARNG
Battalion OIC

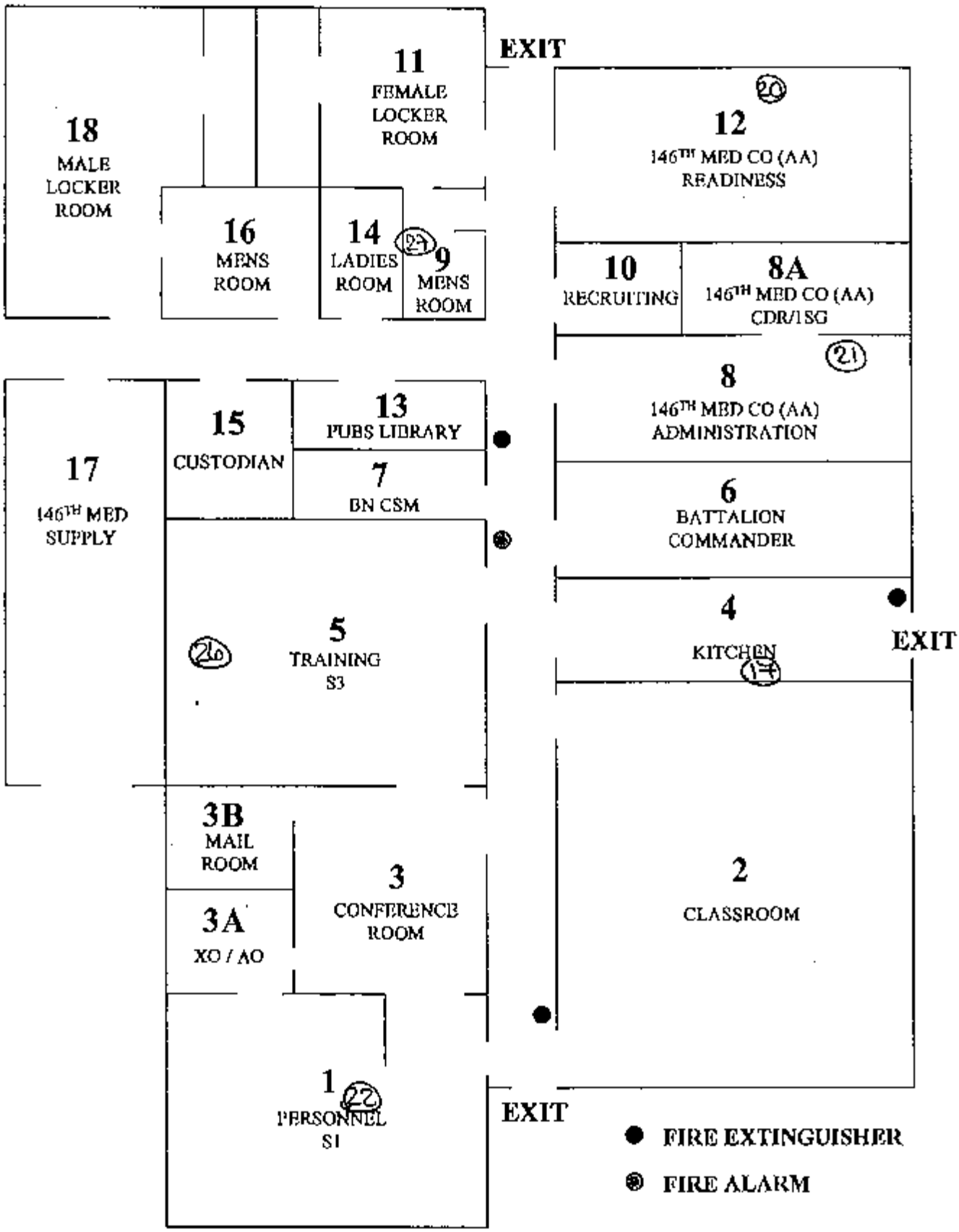
Appendix B
Building Layout

WOOD COUNTY ARMORY FLOOR 2



FIRE EVACUATION PLAN

WOOD COUNTY ARMORY Floor 1



FIRE EVACUATION PLAN

Appendix C
Sampling Sheets and Laboratory Analyses

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	National Guard Bureau	**Job Name:**	Williamstown	**Chain Of Custody:**	119257
Address:	301-III Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Not Provided	**Date Analyzed:**	11/19/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	19-Nov-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0408534	WVWIL307-7	Furnace	Wipe	****	0.111	5.40	ug/ft²	25	ug/ft²	
0408535	WVWIL307-8	Flame	Wipe	****	0.111	108.01	ug/ft²	890	ug/ft²	
0408536	WVWIL307-9	Furnace	Wipe	****	0.111	5.40	ug/ft²	29	ug/ft²	
0408537	WVWIL307-10	Flame	Wipe	****	0.111	108.01	ug/ft²	290	ug/ft²	
0408538	WVWIL307-11	Flame	Wipe	****	0.111	108.01	ug/ft²	590	ug/ft²	
0408539	WVWIL307-12	Furnace	Wipe Blank	****	N/A	0.30	ug	0.34	ug	
0408540	WVWIL307-13	Furnace	Wipe	****	0.111	13.50	ug/ft²	80	ug/ft²	
0408541	WVWIL307-14	Furnace	Wipe	****	0.111	5.40	ug/ft²	32	ug/ft²	
0408542	WVWIL307-15	Furnace	Wipe	****	0.111	67.51	ug/ft²	140	ug/ft²	
0408543	WVWIL307-16	Flame	Wipe	****	0.111	108.01	ug/ft²	1300	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: Non-Responsive

Technical Manager: Non-Responsive

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:**	WVWIL307	**Chain Of Custody:**	121266
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Williamstown, WV	**Date Analyzed:**	12/29/2003
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	1103	**Report Date:**	29-Dec-03
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit			Final Result		Comments
0413624	WVWIL307-17	Furnace	Wipe	****	0.111	2.70	ug/ft²		2.9	ug/ft²	
0413625	WVWIL307-18	Furnace	Wipe Blank	****	N/A	0.30	ug		0.35	ug	
0413626	WVWIL307-20	Furnace	Wipe	****	0.111	2.70	ug/ft²		3.6	ug/ft²	
0413627	WVWIL307-21	Furnace	Wipe	****	0.111	2.70	ug/ft²		3.1	ug/ft²	
0413628	WVWIL307-22	Furnace	Wipe	****	0.111	2.70	ug/ft²		8.2	ug/ft²	
0413629	WVWIL307-23	Furnace	Wipe	****	0.111	13.50	ug/ft²		65	ug/ft²	
0413630	WVWIL307-24	Furnace	Wipe Blank	****	N/A	0.30	ug	<	0.3	ug	
0413631	WVWIL307-25	Furnace	Wipe	****	0.111	2.70	ug/ft²		22	ug/ft²	
0413632	WVWIL307-26	Furnace	Wipe	****	0.111	6.75	ug/ft²		52	ug/ft²	
0413633	WVWIL307-27	Furnace	Wipe	****	0.111	13.50	ug/ft²		87	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: Non-Responsive

Technical Manager: Non-Responsive

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

DATA CHEM LABORATORIES, INC.

Submitted To: Non-Responsive
Shaw Environmental, Inc.
100 Field Crest Ave., 4th Floor
Edison, NJ 08837

Reference Data:	**Lead**
Client Sample No.:	WVMOR301-A1 through WVKIN312-A3
P.O. No.:	1103
Sample Location:	West Virginia
Sample Type:	Filter
Method Reference:	NIOSH 7300
DCL Set ID No.:	03-S-5546
DCL Sample ID No.:	03-33055 through 03-33111
Sample Receipt Date:	11/12/2003
Preparation Date:	11/13/03
Analysis Date:	11/13/03

The samples were prepared and analyzed in accordance with NIOSH method 7300 using a Perkin Elmer 3000XL ICP.

The sample condition upon receipt was acceptable except where noted.

The results are in the enclosed data table. Results relate only to the items tested and are not blank corrected unless indicated in the data table.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Non-Responsive
Analyst

Non-Responsive
Reviewer

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

WEST COAST OFFICE
11 SANTA YORMA COURT
NOVATO, CALIFORNIA 94945
800 280-8071, FAX 415 893-9469

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVMOR301-A1	03-33055	287.48	ND	<0.003
WVMOR301-A2	03-33056	267.30	ND	<0.004
WVMOR301-A3	03-33057	0	ND	-
WVKEV300-A1	03-33058	330.91	ND	<0.003
WVKEV300-A2	03-33059	349.03	ND	<0.003
WVKEV300-A3	03-33060	0	ND	-
WVELK301-A1	03-33061	294.90	ND	<0.003
WVELK301-A2	03-33062	305.95	ND	<0.003
WVELK301-A3	03-33063	0	ND	-
WVBUC301-A1	03-33064	347.99	ND	<0.003
WVBUC301-A2	03-33065	325.70	ND	<0.003
WVBUC301-A3	03-33066	0	ND	-
WVWES302-A1	03-33067	352.69	ND	<0.003
WVWES302-A2	03-33068	329.84	ND	<0.003
WVWES302-A3	03-33069	0	ND	-
WVCLA302-A1	03-33070	265.52	ND	<0.004
WVCLA302-A2	03-33071	316.75	ND	<0.003
WVCLA302-A3	03-33072	0	ND	-
WVSAL303-A1	03-33073	344.06	ND	<0.003
WVSAL303-A2	03-33074	334.38	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 1		102.	
% Recovery	LCS 2		104.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVSAL303-A3	03-33075	0	ND	-
WVFAL303-A1	03-33076	394.42	ND	<0.003
WVFAL303-A2	03-33077	341.33	ND	<0.003
WVFAL303-A3	03-33078	0	ND	-
WVHOR304-A1	03-33079	310.23	ND	<0.003
WVHOR304-A2	03-33080	262.52	ND	<0.004
WVHOR304-A3	03-33081	0	ND	-
WVWHE304-A1	03-33082	341.47	ND	<0.003
WVWHE304-A2	03-33083	354.36	ND	<0.003
WVWHE304-A3	03-33084	0	ND	-
WVHOU307-A1	03-33085	300.32	ND	<0.003
WVHOU307-A2	03-33086	295.99	ND	<0.003
WVHOU307-A3	03-33087	0	ND	-
WVWIL307-A1	03-33088	320.58	ND	<0.003
WVWIL307-A2	03-33089	320.14	ND	<0.003
WVWIL307-A3	03-33090	0	ND	-
WVPAR308-A1	03-33091	327.68	ND	<0.003
WVPAR308-A2	03-33092	312.68	ND	<0.003
WVPAR308-A3	03-33093	0	ND	-
WVPOI308-A1	03-33094	347.55	ND	<0.003
	Prep Blank		ND	
% Recovery	LCS 3		100.	
% Recovery	LCS 4		99.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive

Analyst

Non-Responsive

Reviewer

Results
Lead

Client #	DCL #	Sample Volume (L)	µg/sample	mg/m^3
WVPOI308-A2	03-33095	338.34	ND	<0.003
WVPOI308-A3	03-33096	0	ND	-
WVKEN309-A1	03-33097	345.53	ND	<0.003
WVKEN309-A2	03-33098	341.28	ND	<0.003
WVKEN309-A3	03-33099	0	ND	-
WVHUN309-A1	03-33100	246.95	ND	<0.004
WVHUN309-A2	03-33101	252.44	ND	<0.004
WVHUN309-A3	03-33102	0	ND	-
WVSPE310-A1	03-33103	302.21	ND	<0.003
WVSPE310-A2	03-33104	298.31	ND	<0.003
WVSPE310-A3	03-33105	0	ND	-
WVGAS310-A1	03-33106	262.32	ND	<0.004
WVGAS310-A2	03-33107	264.73	ND	<0.004
WVGAS310-A3	03-33108	0	ND	-
WVKIN312-A1	03-33109	344.28	ND	<0.003
WVKIN312-A2	03-33110	306.78	ND	<0.003
WVKIN312-A3	03-33111	0	ND	-
	Prep Blank		ND	
% Recovery	LCS 5		104.	
% Recovery	LCS 6		102.	
RPL			1.	

ND = not detected at or above the reporting limit (RPL).
LCS = laboratory control sample.

Non-Responsive [redacted]
Analyst

Non-Responsive [redacted]
Reviewer

Industrial Hygiene Sampling Calculation Worksheet

National Guard Armory	**Location:**	Williamstown
	Date:	11/3/2003

Sample 1

Sample Number: WVWIL307-A1

Pump: 647615

	Pre Flow Rate	**Post Flow Rate**
	2.549	2.486
	2.545	2.491
	2.566	2.49
	2.572	2.495
Average	**2.558**	**2.491**

Average Pre and Post **2.5243**

Time 1	13:10
Time 2	15:17
Total Time Sampled	**2:07**
Minutes Sampled	127.00

Volume **320.58 Liters**

Sample 2

Sample Number: WVWIL307-A2

Pump: 648339

	Pre Flow Rate	**Post Flow Rate**
	2.496	2.478
	2.523	2.485
	2.507	2.497
	2.533	2.49
Average	**2.515**	**2.488**

Average Pre and Post **2.5011**

Time 1	13:11
Time 2	15:19
Total Time Sampled	**2:08**
Minutes Sampled	128.00

Volume **320.14 Liters**

Appendix D
References

References

Title 29, Code of Federal Regulations CFR), Part 1910, Occupational Safety and Health Administration (current edition)

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) 62-2002, Ventilation for Acceptable Indoor Air Quality

Instructions for Completing the Sampling of Army National Guard Armories, Lead Wipe Sampling Procedure included with the Request for Proposal

Air Sampling for Lead - Method 7082 of the National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods

Design Guide DG-415-2, Logistics Facilities, National Guard Bureau Installation Division, 14 December 1999

Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998

Army Regulation (AR) 40-5, Medical Service, Preventive Medicine, 15 October 1990

AR 385-10, The Army Safety Program, 29 February 2000

Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998

DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000

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

Guidelines for Converting Indoor Firing Ranges to Other Uses, Headquarters, Department of the Army and the Air Force, NG PAM (AR) 385-16/ANGPAM 91-101, 31 January 1994

24 CFR, Part 35, Subpart B, Section 35-110, Definition of Lead-Based Paint, Housing and Urban Development, U. S. Department of Housing

Appendix E
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.

Prepared for:

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




Industrial Hygiene Survey for WVARNG – Williamstown Readiness Center 285 Aviation Drive Williamstown, West Virginia 26187

AECOM
December 2012
Document No.: 60275401/Williamstown Readiness Center

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

Industrial Hygiene Survey for WVARNG – Williamstown Readiness Center 285 Aviation Drive Williamstown, West Virginia 26187

Non-Responsive
[redacted]

Non-Responsive
[redacted]
Project Manager

Non-Responsive
[redacted]
Northeast District Health & Safety Manager

AECOM Environment
December 2012
Document No.: 60275401/Williamstown Readiness Center

AECOM

Contents

List of Appendices

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Executive Summary

On October 15, 2012, AECOM Technical Services Northeast, Inc. (AECOM) conducted an Industrial Hygiene (IH) survey of the Williamstown Readiness Center facility located at 285 Aviation Drive in Williamstown, West Virginia. MSG Non-R was the point of contact for the facility and accompanied AECOM during the survey to provide access and information concerning the Williamstown Readiness Center operations.

The industrial hygiene survey was conducted in general accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated January 2012.

The Williamstown Readiness Center is currently staffed by twenty-four personnel. The facility is configured as administrative areas and a drill hall, with maintenance bays used for storage at the southeast corner of the building.

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

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

The Williamstown Readiness Center is housed in a two story masonry building constructed in 2003.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

Wipe samples collected in association administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United states Department of Housing and Urban Development's (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas.

No damaged suspect asbestos containing materials were observed during the evaluation.

No peeling paint was observed in the facility during the survey.

Some evidence of water intrusion was observed during the survey.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of rooftop air handling units that provide fresh air to occupied spaces.

1.0 Facility Description and Operations

The Williamstown Readiness Center is located in a two story masonry building constructed in 2003. The drill hall is at the east side of the facility, with the kitchen located on the east side of the drill hall. The west section of the building is primarily administrative space occupying two floors. There was no firing range associated with the facility. Interior finishes are typically comprised of painted block walls, drywall; acoustical drop ceilings, and floor tile. Fiberglass pipe insulation was observed throughout the facility.

The primary activity at the Williamstown Readiness Center is routine administrative duties. The Williamstown Readiness Center is currently staffed by approximately twenty-four personnel. No vehicle maintenance activities are undertaken at the facility.

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall and administrative areas, following the Occupational Safety & Health Administration (OSHA) wipe sampling method and using Ghost Wipes.

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

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
WT-01	Drill Hall Floor - North	<110 ug/ft^2
WT-02	Drill Hall Floor – South	<110 ug/ft^2
WT-03	Drill Hall table	<110 ug/ft^2
WT-04	Kitchen – Top of Ice Machine	<110 ug/ft^2
WT-05	772nd Troop Command - Desk	<110 ug/ft^2
WT-06	772nd Troop Command – Top of Bookshelf	<110 ug/ft^2
WT-07	2nd Floor corridor - Floor	<110 ug/ft^2
WT-08	2nd Floor corridor – Supply Grille	<110 ug/ft^2

ug/ft^2 = Micrograms per square foot.

Wipe samples collected in association administrative areas indicated lead levels below the Occupational Safety and Health Administration's (OSHA's) Clarification of "as free as practicable" and lead contamination under 29 Code of Federal Regulations (CFR) 1926.62, The Compliance Directive for the Interim Standard for Lead in Construction, CPL 2-2.58. OSHA recommends the use of the United states Department of Housing and Urban Development's (HUD's) acceptable decontamination level of 200 ug/ft^2 for floors in evaluating the cleanliness of change areas, storage facilities, and lunchrooms/eating areas. Laboratory analytical results are presented in Appendix C.

2.1.2 Air Sampling

Per Non-Responsive of NGB-IH, the requirement for Lead air sampling has been removed from the Statement of Work. It was reported that historically, air samples collected at administrative facilities are typically below the limit of detection.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint. AECOM did not observe peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos-containing materials (ACM) in readily accessible areas of the Williamstown Readiness Center during this survey.

Typical miscellaneous building materials observed throughout the facility but not sampled include floor tiles and associated mastic, drywall, cove base and associated mastic, and ceiling tiles.

3.1.3 Water Damage/Mold

AECOM did observe some evidence of water intrusion during the survey, however, no suspected mold growth was observed.

3.1.4 Housekeeping

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

3.1.5 Indoor Air Quality/ Ergonomics

The administration section contains general office space. The administration section is generally utilized by all of the Williamstown Readiness Center staff members. No Indoor Air Quality concerns were noted by the Williamstown Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide and carbon dioxide (parts per million or ppm), temperature (^{o} Fahrenheit), and relative humidity (as percentage) are presented in the following table. All readings were within acceptable guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Outside - Baseline	0.9	416	58.7	46.2
772nd Troop Command	1.8	584	73.8	50.4
Admin. CCO 2-104th	0.9	675	73.6	51.1
Distance Learning Center	0.5	406	71.9	49.4
Classroom	0.7	468	71.2	50.0

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

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

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

No potential for contamination of clean air sources was observed at the facility

AECOM did not observe any obvious indications of maintenance issues with the general ventilation system from readily accessible areas. Percentage of outside air supplied by the HVAC system was calculated using CO_2 levels, and was determined to be approximately 40%, using the ASHRAE formula $\%OA=((C_{RA}-C_{SA})/(C_{RA}-C_{OA}))X100$, where C_{RA}=533 ppm CO_2, C_{SA}=486 ppm CO_2, and C_{OA}=416 ppm CO_2. Based on the carbon dioxide levels observed inside the building during this assessment, there appears to be a sufficient quantity of outside air being delivered via the HVAC system in order to satisfy the occupant load.

Very little dust was observed at diffusers, and site personnel indicated that the system seems to work well. Temperature readings were constant in all areas occupied by readiness center personnel.

4.1.2 HVAC Maintenance

Maintenance is reportedly performed on the HVAC system annually. The system is reportedly controlled by computer and will notify maintenance personnel in the event that additional attention is warranted. Very little dust was observed on supply grilles in the facility.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were adequate in all areas.

Table 5-1: Light Survey

Location	Results (Foot candles)	Met Standard (Y/N)	Standard*
Supply	32.9	Y	30
Kitchen	77.4	Y	50
Locker Room	51.4	Y	7
Classroom	48.5	Y	30
Learning Center	94.3	Y	30
Men's Room	45.3-58.4	Y	5
Corridor	48.0-55.0	Y	5
Drill Hall	32.1	Y	30
Maintenance Area offices	67.6-79.5	Y	50
C Company 2-104th Offices	58.0-85.1	Y	50
772nd Troop Command Offices	58-75	Y	50
Break Room	51.2	Y	10
2nd floor classroom	58.2	Y	30
RSP/Recruiting Office	56.7	Y	50
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There are two maintenance bays located at the southeast corner of the facility. The bays are not generally used for maintenance activities, they are used for storage. Site personnel indicated that occasionally the state maintenance bay is used for periodic maintenance of landscaping equipment, such as oil changes or cleaning of attachment such as mower decks.

7.0 Conclusions and Limitations

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

Housekeeping is performed regularly at the Williamstown Readiness Center.

Lighting levels measured throughout the facility were generally adequate as per American National Standard Institute/Illuminating Engineering Society of North America (ANSI/IESNA) RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005.

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

No damaged suspect asbestos containing materials were observed during the evaluation.

No peeling paint was observed in the facility during the survey.

Some evidence of water intrusion was observed during the survey.

The Heating, Ventilation & Air Conditioning (HVAC) system in the building consists of rooftop air handling units that provide fresh air to occupied spaces.

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

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

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

Appendix A

Williamstown Readiness Center Facility Layout

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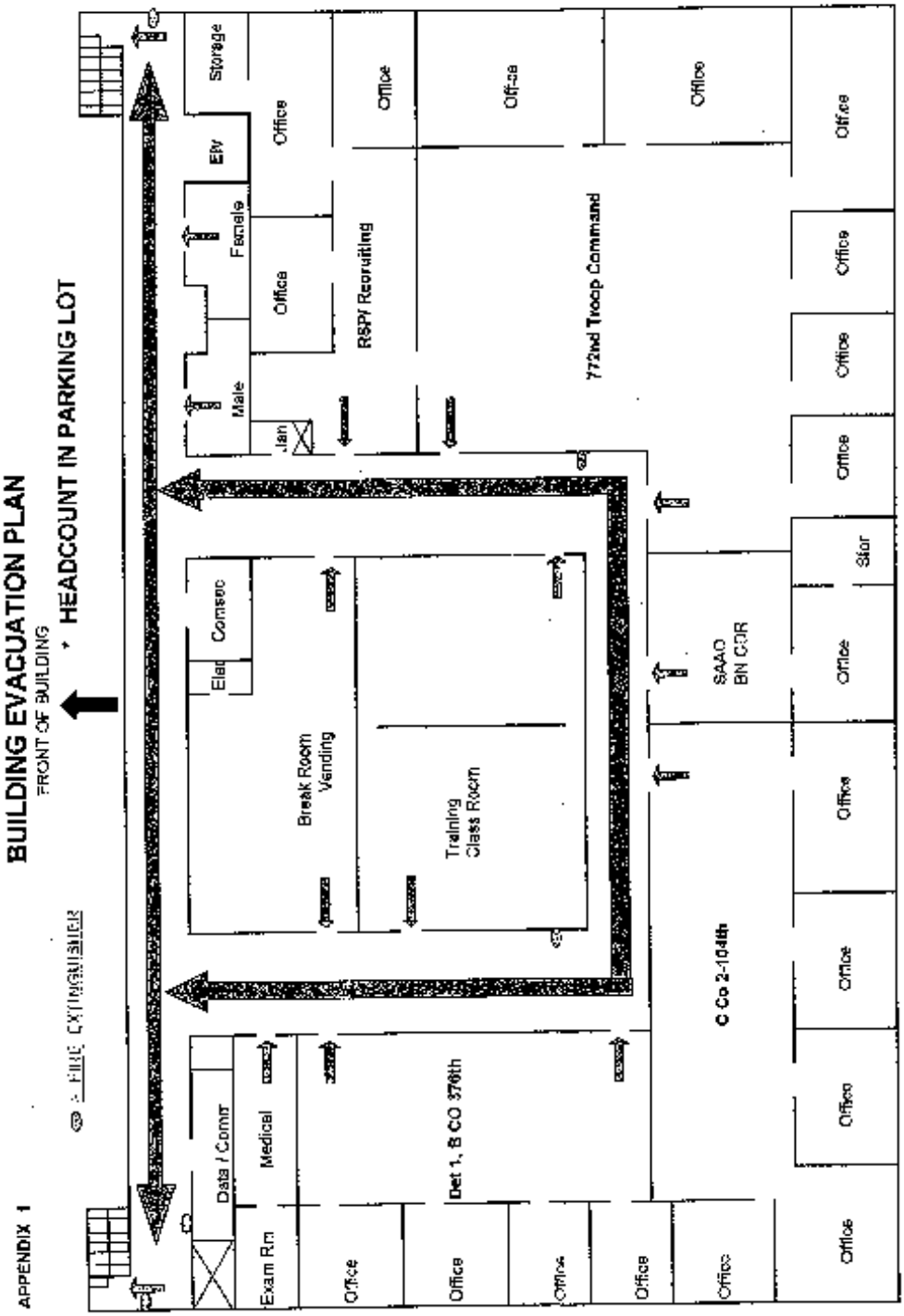

Appendix B

Williamstown Readiness Center Photographs

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Photograph 1

Building Exterior front

Photograph 2

Drill Hall

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Photograph 3

Maintenance Bay (Storage)

Photograph 4

Typical HVAC Supply

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Photograph 5

Kitchen

Photograph 6

State Maintenance Bay (Storage)

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Photograph 7

Typical Construction

Photograph 8

Water damaged ceiling tile in corridor

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Photograph 9

Water damaged ceiling tile in Stairwell

Appendix C

Analytical Results

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Williamstown RC	Chain Of Custody:	514270		
Address:	301-H Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

Attention: Non-[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		Total ug	Final Result		Comments
13008413	WT-01	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008414	WT-02	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008415	WT-03	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008416	WT-04	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008417	WT-05	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008418	WT-06	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008419	WT-07	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	
13008420	WT-08	Flame	Wipe	****	0.111	110	ug/ft²	<12	<110	ug/ft²	

An AIHA (#100470) and NY ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd. · Lanham, MD, 20706 · (301) 459-2640 · Toll Free (800) 346-0961 · Fax (301) 459-2643

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

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

Client:	National Guard Bureau	Job Name:	Williamstown RC	Chain Of Custody:	514270		
Address:	301-IH Old Bay Lane, Attn: ARNG-CIG-F, State Military Reservation	Job Location:	West Virginia	Date Submitted:	10/23/2012		
	Havre de Grace, Maryland 21078	Job Number:	Not Provided	Person Submitting:	AECOM		
		P.O. Number:	W912K6-09-A-0003	Date Analyzed:	10/30/2012	Report Date:	10/30/2012

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

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

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

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

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

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 514270

Mailing/Billing Information:

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

Submittal Information:

1. Job Name: Williamstown RC
2. Job Location: WEST VIRGINIA
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ p Non-Responsive
5. Submitted by: AECOM (Signature)

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day an on file.

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day ☐ Results Required By Noon	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ 5 Day +	☒ Email: Non-Responsive ecom.com
Comments:	☐ 2 Day (Date Due) 10/30/12	☐ Fax: s.army.mil
		☐ Verbals: Non-Responsive 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)

*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)

TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)

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

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

If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☐ Pb Paint Chip (QTY)
X ☒ *Pb Dust Wipe (wipe type ghost) 8 (QTY)
☐ *Pb Air (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ *Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

SAMPLE INFORMATION				ANALYSIS								MATRIX				CLIENT CONTACT
CLIENT ID #	SAMPLE LOCATION/ID	DATE/ TIME	VOL (L)/ Wipe Area	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
																Date/Time: Contact: By:
	SEE ATTACHED FIELD DATA SHEETS															
																Date/Time: Contact: By:
																Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 10/23/12 @ Via: FedEx By (Print): Non-Responsive
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

AECOM

Surface Sampling Field Data Sheet

Date Collected: 10/15/12
Job Name: WILLIAMSTOWN RC
Page 1 of 1
Company: AECOM
Job Number: 60275401
Job Location: WEST VIRGINIA
Phone Number: 315 437-0525
Contact Person: Non-Responsive
Address: 285 AVIATION DR.
WILLIAMSTOWN, WV
Collected By: Non-Responsiv
COC Number:

Sample Number	Sample Location	Surface/Substrate Sampled	Area Wiped (in^2/ft^2)	Collection Media
WT-01	DRILL HALL North	FLOOR	1/6 in^2	Ghost
WT-02	" " South	FLOOR		
WT-03	" " TABLE	TABLE		
WT-04	Kitchen	Top of ICE Machine		
WT-05	772nd Troop Command	Desk		
WT-06	772nd Troop Command	Top of BOOKSHELF		
WT-07	2nd Fl Corridor	FLOOR		
WT-08	2nd Fl. Corridor	Air Supply Grille	↓	↓

Please Return Samples To:
AMA Analytical Services, Inc., 4475 Forbes Blvd., Lanham, MD 20706, (800) 346-0961/(301) 459-2640 Fax, www.amalab.com, info@amalab.com

Appendix D

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